



TRANSPORTATION

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INTRODUCTION

The Transportation Element provides the link between the Land Use Element and the transportation facilities and services needed to support growth during the next twenty years. This is accomplished by identifying capacity, operational, and safety improvements along City roadways and also by addressing multimodal needs such as transit, pedestrian, and bicycle facilities. The Transportation Element reflects the interdependence of transportation and land use and is influenced by choices made as part of the Land Use Element. Conversely, land uses are similarly influenced by choices and policies made in the Transportation Element.

The Transportation Element is a key component of the City's Comprehensive Plan and works hand-in-hand with other Comprehensive Plan Elements. It identifies the City of Maple Valley's goals and policies for transportation as well as the City's future transportation system and facilities, level-of-service (LOS) standards, and concurrency monitoring system. Future land uses proposed as part of the Land Use Element are used to develop transportation strategies and to identify necessary transportation facilities (roadways, sidewalks, trails, bike lanes, etc.). Similarly, the Capital Facilities Element and the City's ongoing Transportation Improvement Program (TIP) present more-specific facility recommendations based on the Transportation Element.

Growth Management Act

The Transportation Element was developed in accordance with the Washington State Growth Management Act (GMA). The GMA requires that the following topics be addressed within the Transportation Plan:

- Land use assumptions used in estimating travel demand.
- An inventory of existing transportation facilities and services.
- LOS standards to gauge the performance of the system.
- Identification of actions and requirements needed to bring existing facilities and services up to standard.
- Forecasts of future traffic based on the land use plan.
- Identification of improvements and programs needed to address current and future transportation system deficiencies, including Transportation Demand Management strategies.
- A realistic multi-year financing plan that is balanced with the adopted level of service standards and the land use element.
- An explanation of intergovernmental coordination and regional consistency.

Local transportation elements must also include the following:

- State-owned transportation facilities in the transportation inventory.
- The LOS for state-owned transportation facilities.



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- Identification and assessment of GMA concurrency and the applicability to highways of statewide significance.
- An estimate of the impacts to state-owned transportation facilities resulting from local land use assumptions.

Study Area

The study area includes all of the area within Maple Valley city limits and Urban Growth Area (UGA). The UGA has been delineated with King County, consistent with the requirements of the GMA. The transportation planning study area is shown in Figure 4.1. The City lies adjacent to the UGAs of the City of Covington (west) and the City of Black Diamond (south). Unincorporated areas of King County surround portions of Maple Valley, and sections of the city limits are used to define portions of the regional Urban/Rural Boundary between urban and rural lands.



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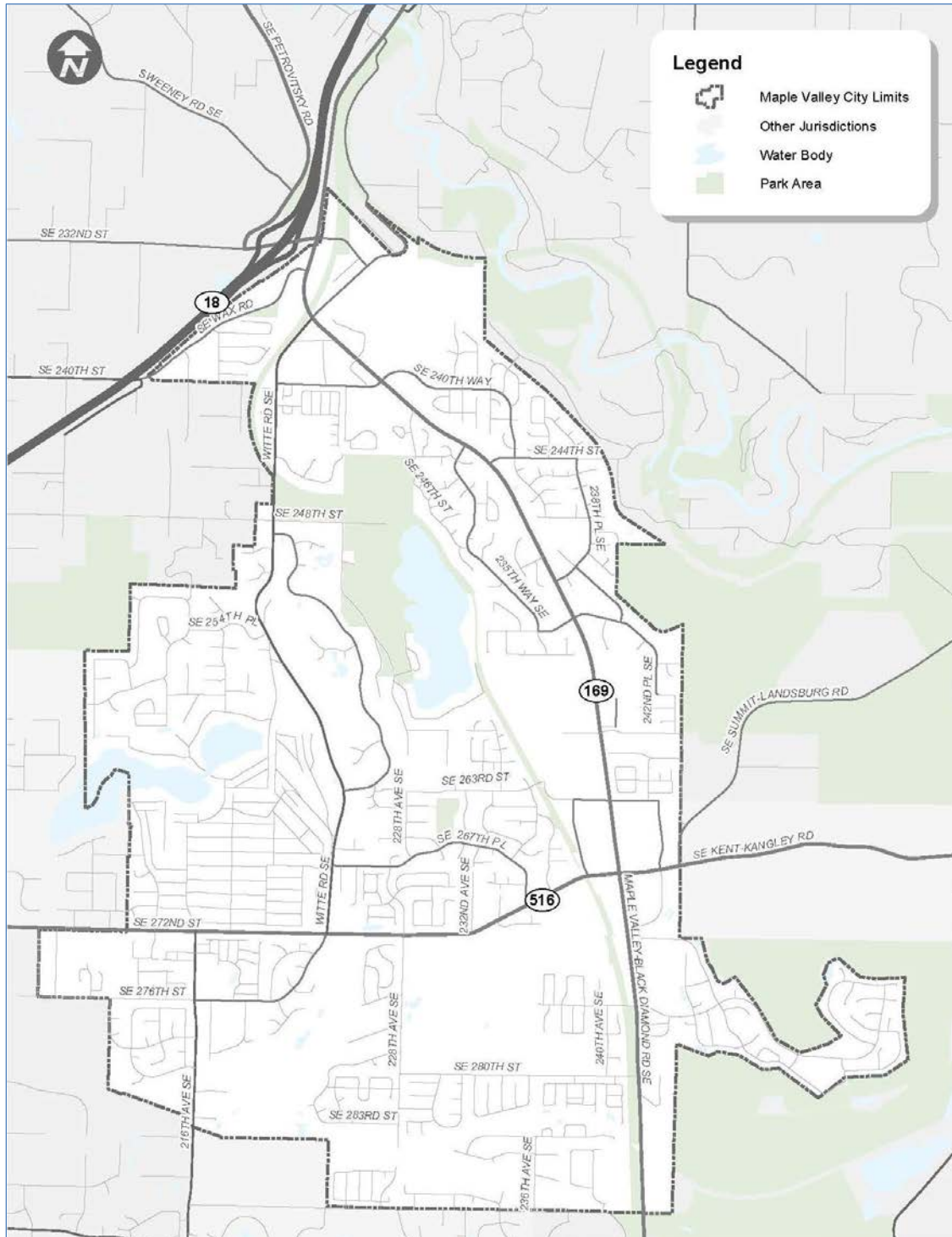


Figure 4.1 - Study Area

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EXISTING TRANSPORTATION SYSTEM INVENTORY

The City's transportation system consists of various transportation facilities, including state highways, arterials, local streets, transit services and facilities, and pedestrian and bicycle facilities. The existing transportation system was inventoried in conjunction with the update of the Transportation Element. The inventory covers the street system, traffic controls, traffic volumes, traffic operations, traffic safety, transit service, and pedestrian and bicycle facilities.

Roadway System and Traffic Controls

The following summarizes the existing roadway system including roadway geometry and locations of signalized and roundabout controlled intersections. Several intersections within the City are signalized, with most of them located along the state highways. Figure 4.2 shows the existing street system as well as signalized and roundabout controlled intersections within the City.

Arterials

Arterials are the major streets that connect Maple Valley with the region, while also serving important intra-city connections. These roads provide for the majority of vehicular travel within the City. These arterial routes create the transportation foundation the City street network is built upon.

SR 169

SR 169 (Renton-Maple Valley Road SE, Maple Valley-Black Diamond Road SE) links Maple Valley to Renton to the north and Black Diamond to the south. SR 169 is primarily a two-lane road through Maple Valley with a 45 to 50 mph speed limit. However, speeds reduce to (35 and 40 mph) and the roadway widens (four to five lanes) near the commercial areas of Wilderness Village and Four Corners. Traffic signals control SR 169 intersections at SE 231st Street, SE Wax Road, Witte Road SE, SE 240th Street, SE 264th Street, SR 516, SE 276th Street, and SE 280th Street. It is classified as a Highway of Statewide Significance (HSS) by the Washington State Legislature.

Kent-Kangley Road

Kent-Kangley Road (SR 516, SE 272nd Street) links Maple Valley to Covington to the west and rural King County to the east. Kent-Kangley Road is a two lane road with turn-lane pockets at major intersections. West of SR 169, it has a posted speed limit of 45 mph. East of SR 169, it has a posted speed limit of 50 mph. Traffic signals control SR 516 intersections at 216th Avenue SE, Witte Road SE, 228th Avenue SE, and SR 169. SR 516 is classified as a Tier 2 Highway of Regional Significance (HRS) by PSRC.

SR 18

SR 18, which borders the City, is a controlled access divided highway linking Maple Valley to Covington, Auburn and Interstate 5 to the west and Interstate 90 to the east. The SR 18/SE 232nd Street interchange coupled with the nearby SR 169/SE 231st Street intersection act as the primary northern gateway to the City. Traffic signals control both SR 18 ramp intersections with SE 232nd



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Street. It is classified as a Highway of Statewide Significance (HSS) by the Washington State Legislature.

Witte Road SE

Witte Road SE is a two to three lane roadway with a 35 mph speed limit. Witte Road SE provides north-south access through the western portion of the City which is primarily comprised of residential land uses. Traffic signals control intersections at SR 169, SE 240th Street, and SR 516. A roundabout has been installed at the intersection with SE 248th Street.

SE Wax Road

SE Wax Road is a two to three lane roadway with a 35 mph speed limit providing regional access to King County and Covington to the west. Within Maple Valley, the only traffic signal along SE Wax Road is located at the intersection with SR 169.



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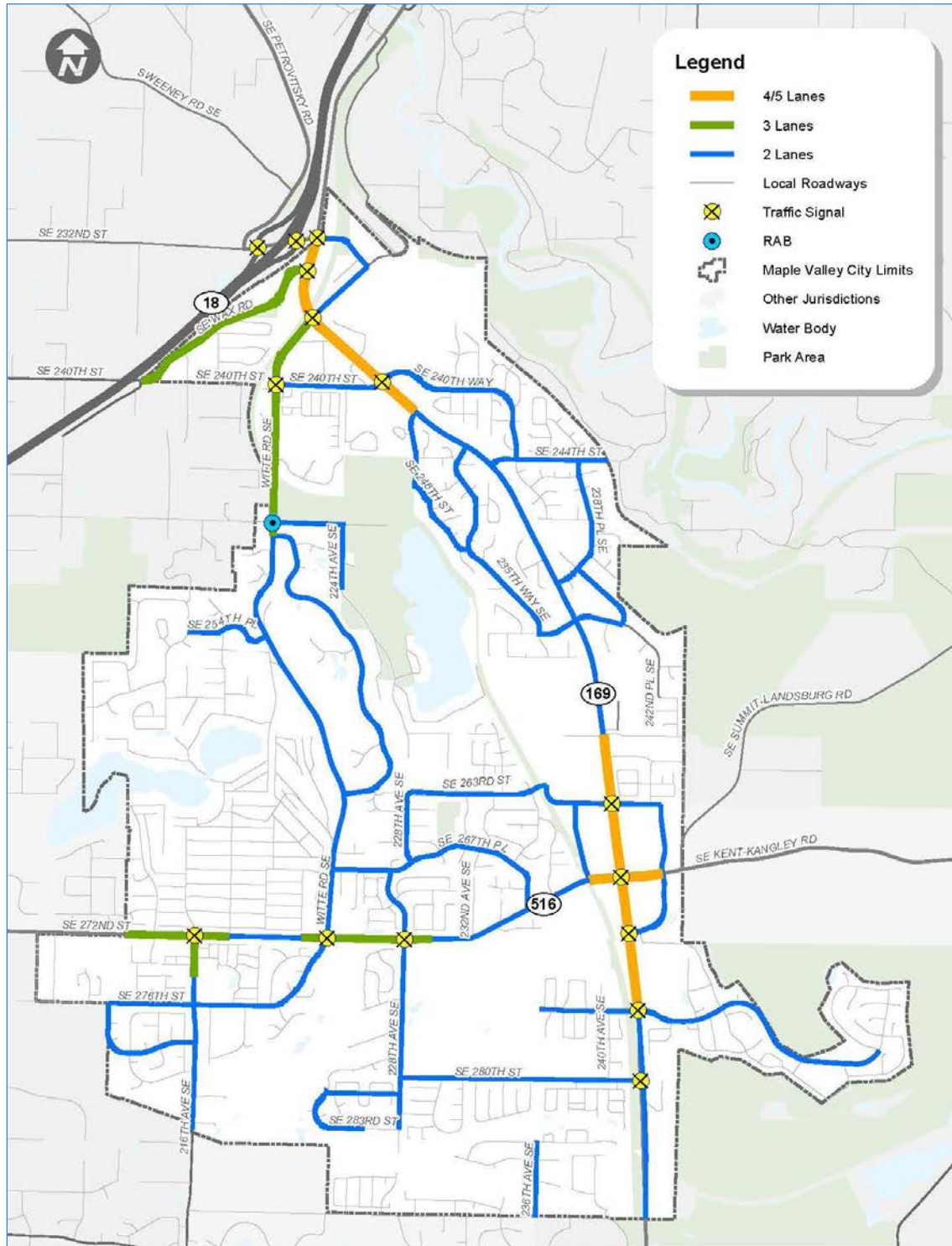


Figure 4.2 - Existing (2014) Street System & Traffic Control



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216th Avenue SE

216th Avenue SE is a two lane north-south link in the southwest area of the City. This roadway links SR 516 to residential areas and Black Diamond to the south. The speed limit is 35 mph and a traffic signal is located at the SR 516 intersection.

Collector Streets

Collector streets direct traffic from neighborhoods to the arterial system. Collectors can provide a higher level of direct access than arterials. Collector streets generally have two travel lanes and 30 to 25 mph speed limits. Examples of streets designated as collectors are SE 240th Street, SE 244th Street, SE 248th Street, SE 264th Street, SE 276th Street, SE 280th Street, and 228th Avenue SE.

Local Access Streets

Local business and neighborhood access streets serve local abutting land uses and neighborhood traffic. All Maple Valley public streets not classified as arterials or collectors are considered local access streets. These local streets generally have two travel lanes and 25 mph speed limits.

Traffic Volumes

PM peak hour traffic volumes were collected early in 2014 at the study intersections. Using factors from 2012 daily and PM peak hour counts, 2014 daily volumes were estimated. Figure 4.3 shows existing traffic volumes within the City. Figure 4.4 summarizes the rates of growth along Maple Valley's major corridors compared to 2010 PM peak hour traffic volumes.

As shown in Figure 4.4, the annual traffic growth for the weekday PM peak hour was largest on the state highways (SR 169 and SR 516). Along SR 169, traffic grew between four to six percent annually throughout the City. North of SE 231st Street, the growth was much less, suggesting most growth was associated with routes connected to SR 18. Annual traffic growth along SR 516 grew at a higher rate, between 5 to 8 percent within the City east of 216th Avenue SE. Witte Road SE had generally flat growth on the north end of the corridor, and about three percent growth on the south end near SR 516. This suggests that growth along SR 169 is not oriented to Witte Road SE.

There are several factors that have contributed to the traffic volume changes since the 2011 Transportation Element was completed. New commercial development in the Four Corners area is increasing demand on local and regional roadways in the area. New residential developments in the southern areas of the City and in neighboring cities have increased commuting patterns through the City. In addition, the City has continued to increase roadway capacity on state highways and intersections, reducing the capacity bottlenecks on these corridors.



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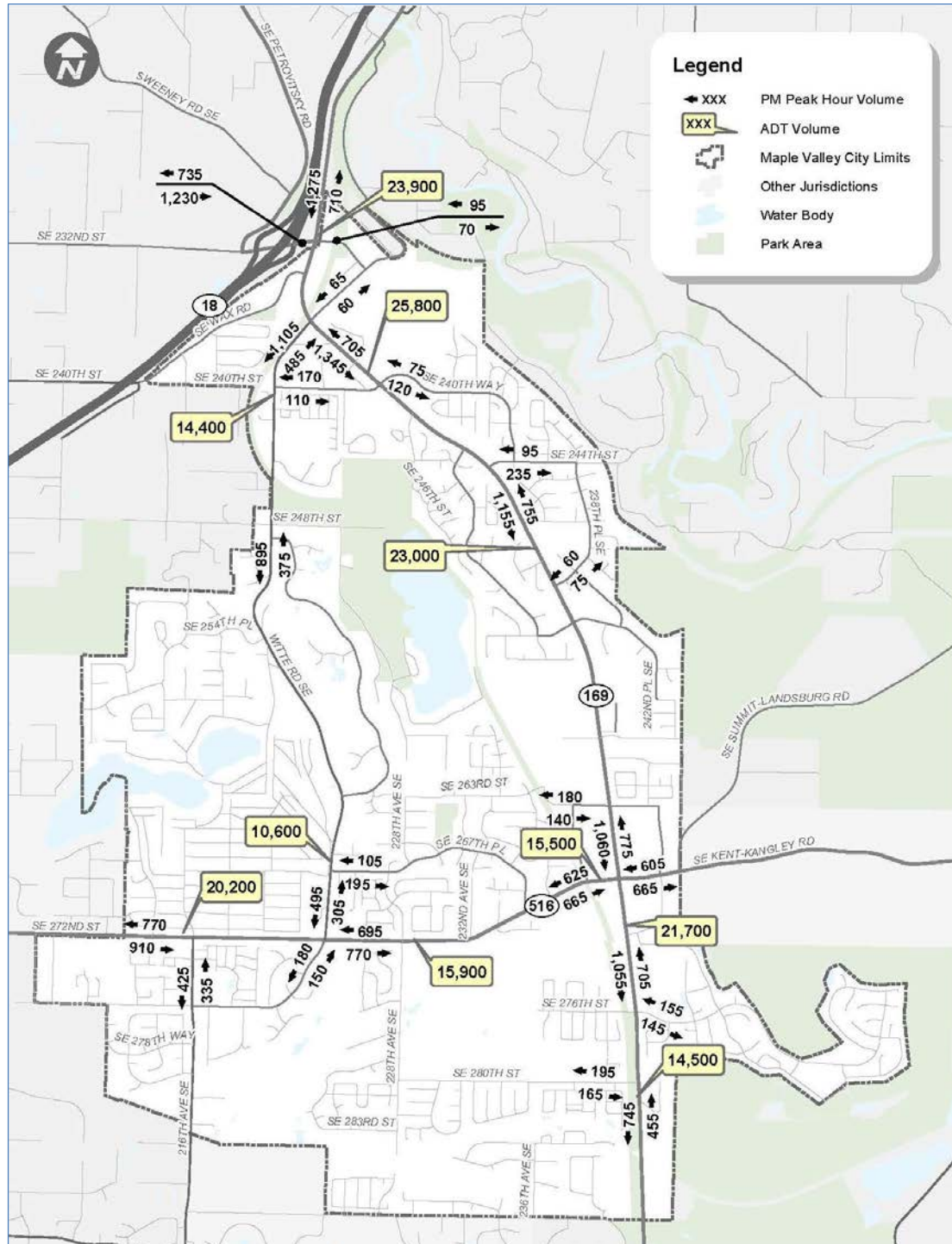


Figure 4.3 - Existing (2014) Daily & PM Peak Hour Traffic Volumes



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		PM Peak Hour Volumes ¹			
Roadway	Location ²	Total Volume (2010)	Annual Growth (2010 to 2014)	Total Volume (2014)	Total Daily Volume ³ (2014)
NORTH-SOUTH ROADWAYS					
SR 169	n/o SE 231st St	1,900	0.9%	2,000	23,900
	n/o SE Wax Rd	2,650	5.0%	3,150	38,100
	n/o Witte Rd SE	3,050	3.7%	3,500	42,400
	n/o SE 240th St	1,700	5.6%	2,150	25,800
	n/o SE 244th St	1,750	6.0%	2,100	25,500
	s/o SE 244th St	1,450	6.1%	1,900	23,000
	n/o SR 516	1,450	5.4%	1,800	21,500
	s/o SR 516	1,450	5.1%	1,800	21,700
	n/o SE 276th St	1,500	4.8%	1,750	21,200
	n/o SE 280th St	1,200	6.0%	1,450	17,500
	s/o SE 280th St	950	6.2%	1,200	14,500
Witte Rd SE	s/o SR 169	1,250	0.9%	1,650	16,500
	s/o SE 240th St	1,400	0.0%	1,450	14,400
	n/o SE 254th Pl	1,200	0.0%	1,150	11,700
	s/o SE 254th Pl	1,000	0.0%	1,050	10,700
	n/o SE 268th St	1,000	3.1%	1,050	10,600
	n/o SR 516	750	3.0%	850	9,400
EAST-WEST ROADWAYS					
SR 516	w/o 216th Ave SE	1,600	1.1%	1,700	20,200
	w/o Witte Rd SE	1,300	5.2%	1,550	18,800
	w/o 228th Ave SE	1,150	5.9%	1,450	17,400
	e/o 228th Ave SE	950	8.1%	1,300	15,900
	w/o SR 169	1,050	5.8%	1,300	15,500
	e/o SR 169	1,000	6.8%	1,250	15,300
SE 231st St	w/o SR 169	1,700	3.9%	1,950	23,700
SE Wax Rd	w/o SR 169	1,000	-1.8%	950	9,500

1. 2014 pm Peak hour volumes based on turning movement counts collected in February 2014. Volumes from 2010 based on counts conducted as part of the 2010 Transportation Element.
2. n/o=north of ;s/o=south of; e/o=east of; w/o=west of
3. Daily volumes based on 2014 PM peak hour counts, and on daily-to-peak factors from 2012 daily counts.

Figure 4.4 - Historical Weekday PM Peak Hour Traffic Volume Comparisons and Daily Volumes

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Traffic Operations

Traffic volumes were used to evaluate existing traffic operations in Maple Valley. Traffic operations analysis provides a quantitative method for evaluating existing and future transportation alternatives. The City's operational standard is presented along with the analysis methodology. A discussion of existing traffic operations is also provided.

Analysis Methodology

Traffic operations were evaluated for the existing year (2014) based upon the level of service (LOS) methodologies of the Highway Capacity Manual (HCM) (Transportation Research Board, 2010). The HCM is a nationally recognized and locally accepted method of measuring traffic flow and congestion. Criteria range from LOS A, indicating free-flow conditions with minimal vehicle delays, to LOS F, indicating extreme congestion with significant vehicle delays. At signalized intersections, LOS is defined in terms of average delay per vehicle. At un-signalized intersections, LOS is measured in term of the average delay per vehicle and is typically reported for the worst traffic movement instead of for the whole intersection.

Intersection LOS analysis was performed for major intersections within the study area based on 2014 conditions. Intersections were selected based upon location and likelihood that they might be impacted by future growth. Twenty-one intersections were identified for analysis, similar to what was studied previously in 2010. Turning movement counts collected in February 2014 were used in this analysis.

LOS Results

Figure 4.6 summarizes the LOS results, delay, and worst movements at the study intersections for 2010 and 2014. The LOS results are also illustrated on Figure 4.5. For the North Maple Valley concurrency study intersections, the weighted average of intersection delay creates LOS D conditions, which is considered acceptable. The South Maple Valley concurrency study intersection weighted average is also at an acceptable LOS D. All other non-concurrency signalized intersections are within City LOS standards. For unsignalized intersections, the new study intersection at SE Kent-Kangley Road/243rd Avenue SE operates at LOS F which does not meet City LOS standards. All other unsignalized and roundabout intersections are within City LOS standards.

Compared to the 2010 analysis, most of the intersections operate at about the same LOS as before. The notable exceptions are: SR 169/Witte Road SE (LOS D to F, with increased volumes); SR 169/SE 271st Street (LOS F to A, with new signal); SR 169/SR 516 (LOS C to LOS D, with increased volumes); and SR 516/Witte Road SE (LOS C to LOS D, with increased volumes).



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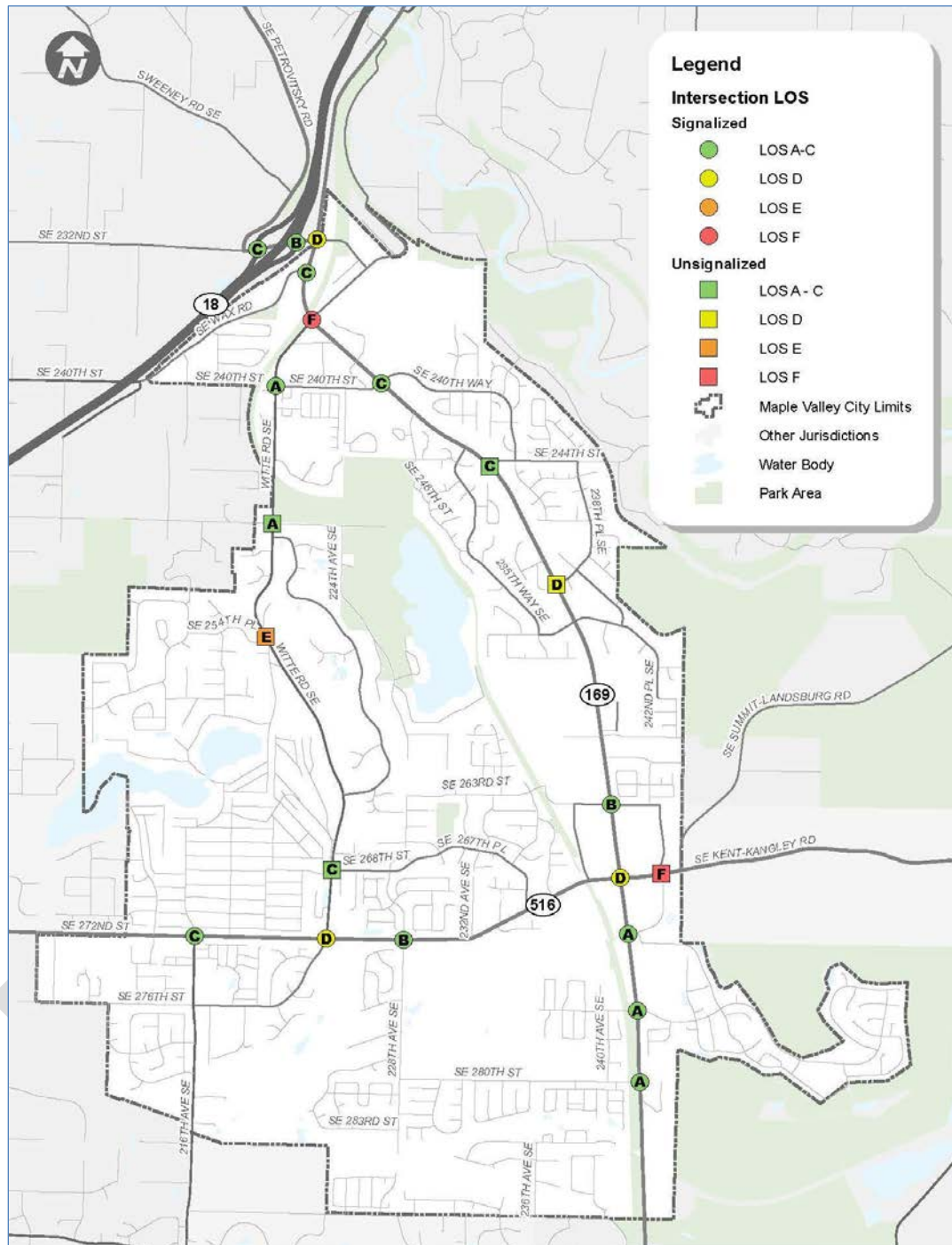


Figure 4.5 - Existing (2014) Intersection Levels of Service



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Intersection		2010 PM Peak Hour ¹			2014 PM Peak Hour		
Major Rd	Minor Rd	LOS ²	Delay ³ (WM) ⁴	Control ⁵	LOS	Delay (WM)	Control
SR 169	SE 231st St	D	36	Signal	D	38	Signal
SR 169	SE Wax Rd	D	38	Signal	C	31	Signal
SR 169	Witte Rd SE	D	55	Signal	F	89	Signal
SR 169	SE 240th St	C	32	Signal	C	23	Signal
SR 169	SE 244th St	C	24 (WB)	TWSC	C	21 (WB)	TWSC
SR 169	SE 251st St	C	16 (WB)	TWSC	D	28 (WB)	TWSC
SR 169	SE 264th St	A	5	Signal	B	17	Signal
SR 169	SR 516	C	29	Signal	D	44	Signal
SR 169	SE 271st St	F	>200 (WB)	TWSC	A	8	Signal
SR 169	SE 276th St	A	9	Signal	A	10	Signal
SR 169	SE 280th St	B	11	Signal	A	9	Signal
SR 516	216th Ave SE	B	15	Signal	C	21	Signal
SR 516	Witte Rd SE	C	29	Signal	D	53	Signal
SR 516	228th Ave SE	A	7	Signal	B	12	Signal
Witte Rd SE	SE 240th St	B	12	Signal	A	9	Signal
Witte Rd SE	SE 248th St	A	5	Round	A	6	Round
Witte Rd SE	SE 254th Pl	E	40 (EB)	TWSC	E	39 (EB)	TWSC
Witte Rd SE	SE 268th St	B	14 (EB)	TWSC	C	16 (WB)	TWSC
SE 231st St	SR 18 NB Ramps	C	23	Signal	B	11	Signal
SE 231st St	SR 18 SB Ramps	C	31	Signal	C	27	Signal
SE Kent-Kangley Rd	243rd Ave SE		NA ⁶		F	56 (SB)	TWSC
<i>Corridor Weighted Average LOS</i>							
North Maple Valley	(4 intersections)	D	41		D	47	
South Maple Valley	(3 intersections)	C	25		D	40	

1. Level of service evaluated as part of 2011 Transportation Plan update.
2. Level of service (A to F), Level of service analysis based on *Highway Capacity Manual 2010* (TRB, 2010) methodology.
3. Average delay in seconds per vehicle.
4. \Worst movement (For unsignalized intersections, level of service reflects operations for worst movement only).
5. Intersections traffic control: "Signal" is traffic signal; "TWSC" has stop signs on minor approach; "Round" is a roundabout. Not available. Intersection not evaluated in 2004.

Figure 4.6 - 2014 Weekday PM Peak Hour LOS at Study Intersections



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Traffic Safety

Historical collision data along both SR 169 and SR 516 were provided by WSDOT for the three-year period from 2012 to 2014 (the most recent data available). The summary of reported accidents along each state highway is shown in Figures 4.7 and 4.8. In addition, no collisions resulting in fatalities were reported within the City of Maple Valley during the analysis time period.

Intersection Safety Analysis

Figure 4.7 summarizes the collision history at major intersections study intersections. The most common collision types for SR 169 and SR 516 intersections were rear-end collisions, typically reflective of congested conditions during peak hours. Typically any intersection with a collision rate greater than 1.0 collision per million entering vehicles (MEV) should be monitored closely to determine if improvements could be made to improve safety. In the most recent collision safety analysis, none of the intersections reached this collision rate threshold.

At most study intersections the average annual number of collisions has decreased compared to the 2010 analysis. Most notably are collision reductions at SR 169/SE 231st Street, SR 169/SE 240th Street, and SR 169/SR 516 despite increases in traffic volumes. This suggests the City efforts to improve safety through roadway improvements and other means appear to be successful.



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Intersection	2010 Analysis				2014 Analysis			
	Total # of Collisions (2006 to 2009)	Average Collisions per Year (2010)	Collisions per MEV (2010) ²	Most Common Collision Type	Total # of Collisions (2012 to 2014)	Average Collisions per Year (2014)	Collisions per MEV (2014)	Most Common Collision Type
SR 169 / SE 231st St	52	17.3	1.5	Rear-End	25	8.3	0.6	Rear-End
SR 169 / SE Wax Rd	34	11.3	0.9	Rear-End	20	6.7	0.5	Rear-End
SR 169 / Witte Rd SE	13	4.3	0.4	Rear-End	8	2.7	0.2	Angle
SR 169 / SE 240th St	24	8.0	1.1	Rear-End	10	3.3	0.4	Rear-End
SR 169 / SE 244th St	2	0.7	0.1	Rear-End	4	1.3	0.2	Angle
SR 169 / SE 251st St		NA ¹			0	0.0	0.0	None
SR 169 / SE 264th St	5	1.7	0.3	Rear-End	9	3.0	0.3	App. Turn
SR 169 / SR 516	33	11.0	1.2	Rear-End	27	9.0	0.8	Rear-End
SR 169 / SE 271st St	8	2.7	0.4	Angle	12	4.0	0.5	Angle
SR 169 / SE 276th St	5	1.7	0.3	Angle	5	1.7	0.2	Angle
SR 169 / SE 280th St	6	2.0	0.5	Rear-End	3	1.0	0.2	Rear-End
SR 516 / 216th Ave SE	13	4.3	0.7	Rear-End	17	5.7	0.8	Rear-End
SR 516 / Witte Rd SE	18	6.0	0.9	Rear-End	18	6.0	0.8	Rear-End
SR 516 / 228th Ave SE	4	1.3	0.3	Rear-End	10	3.3	0.6	Rear-End
Witte Rd SE / SE 240th St	3	1.0	0.2	Rear-End	4	1.3	0.2	Rear-End
Witte Rd SE / SE 248th St	9	3.0	0.6	Rear-End	10	3.3	0.6	Fixed Obj.
Witte Rd SE / SE 254th St	1	0.3	0.1	Rear-End	3	1.0	0.2	Rear-End
Witte Rd SE / SE 268th St	6	2.0	0.6	Rear-End	0	0.0	0.0	None
SE 231st St / SR 18 NB Ramps	5	1.7	0.2	Rear-End	16	5.3	0.7	Angle
SE 231st St / SR 18 SB Ramps	14	4.7	0.7	Angle	7	2.3	0.3	Rear-End
SE Kent-Kangley Rd / 243rd Ave SE		NA ¹			6	2.0	0.5	Angle

Source: WSDOT Historical Collision Records (2012-2014)

1. "NA" means intersection not evaluated in 2010.

2. Collisions per million entering vehicles.

Figure 4.7 - Collision History for Major Intersections (2012 to 2014)

Roadway Safety Analysis

The average number of collisions per year and associated collision rates were analyzed for both the SR 169 and SR 516 corridors to identify highway segments with potential safety issues. The results of the highway segment analysis are summarized in Figure 4.7. The highway segments listed in Figure 4.8 vary in length and traffic volume. To provide meaningful comparison, accidents along highway



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segments are typically analyzed in terms of collisions per million vehicle miles (MVM) traveled. No universally accepted guidelines exist for identifying hazards based on accident rates for highway segments alone.

As shown in Figure 4.8, most corridor segments show a drop in collision rates compared to the analysis done previously in 2010. The exception is the central section of SR 169 (SR 516 to SE 240th Street) that is showing a higher collision rate. The most common collision type is rear-end, suggesting congestion related causes. Overall, the roadway safety data does not identify any high accident locations in need of immediate improvement.

Segment	MP	2010 Analysis				2014 Analysis			
		Total Coll. (2006-2009) ¹	Ave. Coll. per year (2010) ²	Coll. per MVM (2010) ³	Most Common Collision Type	Total Coll. (2012-2014) ¹	Ave. Coll. per year (2014) ²	Coll. per MVM (2014) ³	Most Common Collision Type
SR 169 South (City Limits - SR 516)	10.19 - 11.44	13	4.3	0.6	Driveway Access	10	3.3	0.3	Rear-End
SR 169 Central (SR 516 - SE 240th St)	11.45 - 13.53	23	7.7	0.6	Rear-End	55	18.3	1.1	Rear-End
SR 169 North (SE 240th St - City Limits)	13.54 - 14.12	14	4.7	1.3	Rear-End	22	7.3	0.9	Rear-End
SR 516 (within City)	14.42 - 16.22	38	12.7	1.9	Rear-End	54	18.0	1.4	Rear-End

Source: WSDOT Historical Collision Records (2012-2014)

1. Total number of collisions.

2. Average number of collisions per year.

3. Collisions per million vehicles miles.

Figure 4.8 - Collision History for Highway Segments (2010 to 2014)

Pedestrian/Bike

Between 2012 and 2014, seven pedestrian or bicyclist collisions were reported. However, none of these collisions resulted in fatalities. The pedestrian/bicycle collisions were generally scattered throughout the City with no apparent patterns or reoccurring problems.

Transit and Public Transportation

Public transit and support facilities in Maple Valley are operated and owned by King County Metro Transit. These services include bus transit, carpooling, vanpooling, and park-and-ride lots. The regional, multi-county transit agency, Sound Transit, does not provide service to Maple Valley, but can be accessed in the Cities of Kent and Renton.

Bus Service

As of December 2014, three transit routes provide weekday service to the Maple Valley area. Two of these routes provide direct regional service to Renton and Seattle. The third route provides local service between Renton, Black Diamond, Maple Valley, and Enumclaw. Weekend service is only



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proved on Route 168 between Maple Valley and Kent. Transit service characteristics are summarized in Figure 4.9.

Route #	Scheduled Daily Trips	Service Span (Daily	Headway (Approx.)
168	Weekdays: 33 WB & 33EB Saturday: 18 WB & 18 EB Sunday: 14 WB & 14 EB	Weekdays: 4:30 a.m. to 12:30 a.m. Saturday: 6 a.m. to midnight Sunday: 7 a.m. to 9:30 p.m.	Weekday: 30 to 60 minutes Weekends: 60 minutes
143 (Express)	Weekdays: 6 NB & 5 SB Weekends: None	NB: 5:30 a.m. to 6:30 p.m. SB: 5 p.m. to 6:30 p.m.	20 minutes
907 (DART)	Weekdays: 6 NB & 5 SB Weekends: None	NB: 7:50 a.m. to 5 p.m. SB: 6:30 a.m. to 3:30 p.m.	60 to 120 minutes

Source: <http://metro.kingcounty.gov> (2015)

Figure 4.9 - Maple Valley Transit Service Characteristics

Route 168

Route 168 is the primary all-day transit route connecting the City to Kent and Maple Valley's Four Corners area generally along the SR 516 corridor. From Kent, riders can transfer to a variety of routes including the frequent Route 150 and Sounder commuter rail. Headways range from approximately 30 to 60 minutes on weekdays with 60-minute headways during the weekend. In 2014, Route 168 had 1,700 weekday boardings, up from 1,380 boardings in 2010.

Route 143(Express)

During peak weekday time periods, Metro Route 143 replaces Route 907, providing express service into or out of downtown Seattle. The route operates six northbound morning trips and five afternoon southbound trips (See Figure 4.9) with headways of approximately 20 minutes. Average total daily boardings in 2014 was approximately 600, up from 490 boardings in 2010.

Route 907 (DART)

Route 907 provides Dial-a-Ride Transit (DART) service between the Renton Park-and-Ride and the City of Enumclaw via SR 169 during weekdays. Route 907 is a DART route, allowing passengers to request service deviations from the route to improve access to their travel destination. The route operates from 5:30 am to 6:30 pm (excluding the peak hour times that Route 143 replaces Route 907) and only on weekdays. Headways range from 60 to 120 minutes. Based on 2014 data, average total daily boardings are approximately 100 passengers per day.

Maple Valley Park-and-Ride Lot

There are two Park-and-Ride lots located within the City of Maple Valley. Metro Transit maintains the Maple Valley Park-and-Ride located northwest of the SR 169/SE 231st Street intersection. Both Routes 143 and 907 serve this lot. The Park-and-Ride lot has a capacity for 122 spaces, which on average has been historically filled near or above 90 percent occupancy by 9:00 am. A second Park-and-Ride is located at the Maple Valley Town Square (Four Corners area) with a capacity of 97 parking spaces. This Park-and-Ride lot is served by Routes 143, 168, and 907. This lot is well utilized



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at 69 percent, with additional capacity for ridership growth. Figure 4.10 summarizes Maple Valley Park-and-Ride use statistics.

Lot	Demand (vehicles)	Capacity (spaces)	Percent Occupancy
Maple Valley Park-and-Ride	110 (103)	122 (122)	90% (84%)
Maple Valley Town Square	67 (N/A)	97 (N/A)	69% (N/A)

Source: King County Metro Transit, Q4 2009 and Q4 2014.

Note: 2009 usage statistics shown in parenthesis; (N/A) = data not available due to new lot.

Figure 4.10 - 2014 Maple Valley Transit and Park-and-Ride Use Statistics

Vanpool/Carpooling Service

To reduce the traffic volumes on Maple Valley roadways, Metro Transit offers tools to encourage carpooling and vanpooling. Carpooling and vanpooling arrangements vary in cost and complexity depending on the number of persons involved. More information can be found on Metro Transit's website (<http://metro.kingcounty.gov/>).

Regional Transit Service

Maple Valley lies outside the Regional Transit Authority boundaries. As a result, no additional service is currently scheduled for Maple Valley by Sound Transit. Regional express bus service is provided through the Cities of Kent and Renton via SR 167, and commuter rail service is provided via Kent and the City of Tukwila. Commuter rail operates during morning and evening peak hours between Lakewood (south of Tacoma in Pierce County) and Everett via Seattle. Both services provide links to high-capacity transit including Link Light Rail.

Non-Motorized Facilities

The City has major regional non-motorized trails near or within the City limits that act as "arterials" for non-motorized travel. The Cedar River Trail follows the Cedar River from the City of Renton upriver past the northern boundaries of Maple Valley to the community of Landsburg. At Maple Valley the trail intersects the Green-To-Cedar Rivers Trail, which runs through central Maple Valley along Lake Wilderness Park and continues south to the Four Corners area. There are numerous access points along each trail.

In the commercial areas such as Wilderness Village and Four Corners, sidewalks are present along most streets. Outside of these areas, formal pedestrian and bicycle transportation facilities are limited to residential developments constructed in the past 15 years or recent street improvement projects. The City has committed a portion of their annual budget to implement non-motorized improvements as identified in the City's adopted Non-Motorized Plan. Portions of planned major street projects also include elements to improve non-motorized facilities. More details on adopted City plans for pedestrian and bicycle facilities are provided in the *Maple Valley Non-motorized Transportation Plan* (March 2013).

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TRAVEL FORECASTING AND ALTERNATIVE ANALYSIS

The Transportation Systems Plan portion of the Transportation Element is partially developed based on the evaluation of the existing transportation system. The analysis of the existing transportation system identified locations with current operational, safety, and alternative transportation mode deficiencies.

To provide a framework for future transportation system needs, the plan must also consider the transportation needs of future growth. The Growth Management Act (GMA) requires that the transportation planning horizon be at least ten years in the future. The City of Maple Valley selected a 2030 horizon year for the plan. Year 2030 provides a long range look at the transportation system needed to support anticipated growth in the City and other communities in Southeast King County. Travel forecasts have been developed and analysis has been conducted for average weekday conditions during the PM peak hour. The weekday PM peak hour generally has the highest overall traffic volumes in the community and thus provides the basis for identifying capacity related improvement needs.

The primary analysis of 2030 travel forecasts was initially based on the following travel forecasting assumptions:

- Improvement projects in the City of Maple Valley's Transportation Improvement Plan (TIP).
- Improvement projects in TIPs from adjacent jurisdictions.
- Puget Sound Regional Council's Transportation 2040 Plan compilation of regional projects.
- City of Maple Valley existing and future land use data.
- Land use forecasts from adjacent jurisdictions.

Based on these assumptions, travel forecasts were developed using Maple Valley's travel demand model. The model is a tool that is used to convert existing and future land uses into traffic volumes. Alternative roadway and intersection projects were then evaluated in order to understand the effect they would have on travel patterns within the study area and their ability to resolve existing and future capacity deficiencies. The following provides an overview of the land use assumptions, travel demand model, and the alternatives analysis used in preparing the travel forecasts. The resulting travel forecasts are then presented. The travel forecasts provide a technical basis for identifying the transportation improvement projects in the transportation systems plan.

Land Use Assumptions

A strong relationship exists between land uses and the transportation facilities necessary to provide mobility within the community. Land use and transportation influence one another. Future transportation improvements recommended in the Transportation Systems Plan have been defined to support the Land Use Plan.



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The base year (2010) and forecast year (2030) land use totals were compiled or estimated from a variety of sources, including data from PSRC and the King County Assessor. These data sets were supplemented with local agency information and GIS datasets from the Cities of Maple Valley, Covington, and Black Diamond. The 2030 forecast land use was updated based on the information available in 2015, such as the Tahoma High School relocation in south Maple Valley and the Hawk Property in Covington.

Figure 4.11 summarizes the 2010 and 2030 total households and employment within the study area. The study area includes areas surrounding the City, which have been referred to as subareas. These subareas are based on the boundaries of the transportation analysis zones (TAZs) within the City's travel demand model. The subareas were defined to help in understanding general land use assumptions used in the development of the travel forecasts. The subareas include both neighboring cities, as well as unincorporated King County. Subareas one through three encompass the communities of Maple Valley, Covington, and Black Diamond. The remaining subareas encompass parts of Renton, Kent, Auburn, and unincorporated King County. The subareas provide a summary of existing and forecast land use growth within the study area.

Land Use Subareas ¹	Total Households ²			Total Employment ³		
	2010	2030	Annual Growth (2010-2030)	2010	2030	Annual Growth (2010-2030)
1. City of Maple Valley	7,914	10,377	1.4%	2,776	7,575	5.1%
2. Covington Area	6,493	12,655	3.4%	3,815	7,907	3.7%
3. Black Diamond Area ⁴	2,243	9,578	7.5%	684	3,956	9.2%
4. SW King County Area	4,313	8,323	3.3%	898	1,451	2.4%
5. Kent/Auburn Area	19,562	23,477	0.9%	5,417	8,362	2.2%
6. NW County Area	3,151	3,953	1.1%	1,188	1,884	2.3%
7. North County Area	2,050	2,884	1.7%	732	515	-1.7%
8. East County Area	2,535	4,521	2.9%	688	1,457	3.8%
9. Renton Area	14,807	18,985	1.3%	5,496	10,672	3.4%
Study Area Total	63,068	94,753	2.1%	21,694	43,779	3.6%

Source: Data sets provided by TSRC, King County Assessor, and the Cities of Maple Valley, Covington, and Black Diamond.

1. Land use subareas are based on aggregations of study area TAZ data.

2. Dwelling units.

3. Number of employees.

4. Based on the major development plans for Lawson Hills and The Villages.

Figure 4.11 - Study Area Land Use and Socio-Economic Data (2010 to 2030)

Figures 4.12 and 4.13 illustrate land use growth in four districts within the City. A more detailed land use table was prepared that summarizes the data by TAZ, which was then incorporated into the City's travel demand model. While the forecast land use data is for year 2030, it is based upon the



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existing City Land Use Element and allocated growth targets. The 2030 land use forecasts have been interpolated from 2022 to 2030 based on an updated GIS inventory of buildable lands within the City.

Land Use Summary Districts ¹	Total Households ²			Total Employment ³		
	2010	2030	Annual Growth (2010-2030)	2010	2030	Annual Growth (2010-2030)
1. North SR 169 Corridor	2,176	2,914	1.5%	1,283	2,972	4.3%
2. Four Corners	778	1,738	4.1%	1,021	3,363	6.1%
3. Witte Road Corridor	2,824	3,195	0.6%	226	226	0.0%
4. South City Area	2,136	2,530	0.9%	246	1,014	7.3%
City Total	7,914	10,377	1.4%	2,776	7,575	5.1%

Source: City of Maple Valley

1. See Figure 4.13. Land use districts are based on aggregations of study area TAZ data. Districts were developed for illustrative purposes only.
2. Dwelling units.
3. Number of employees.

Figure 4.12 – City Land Use and Socio-Economic Data (2010 to 2030)



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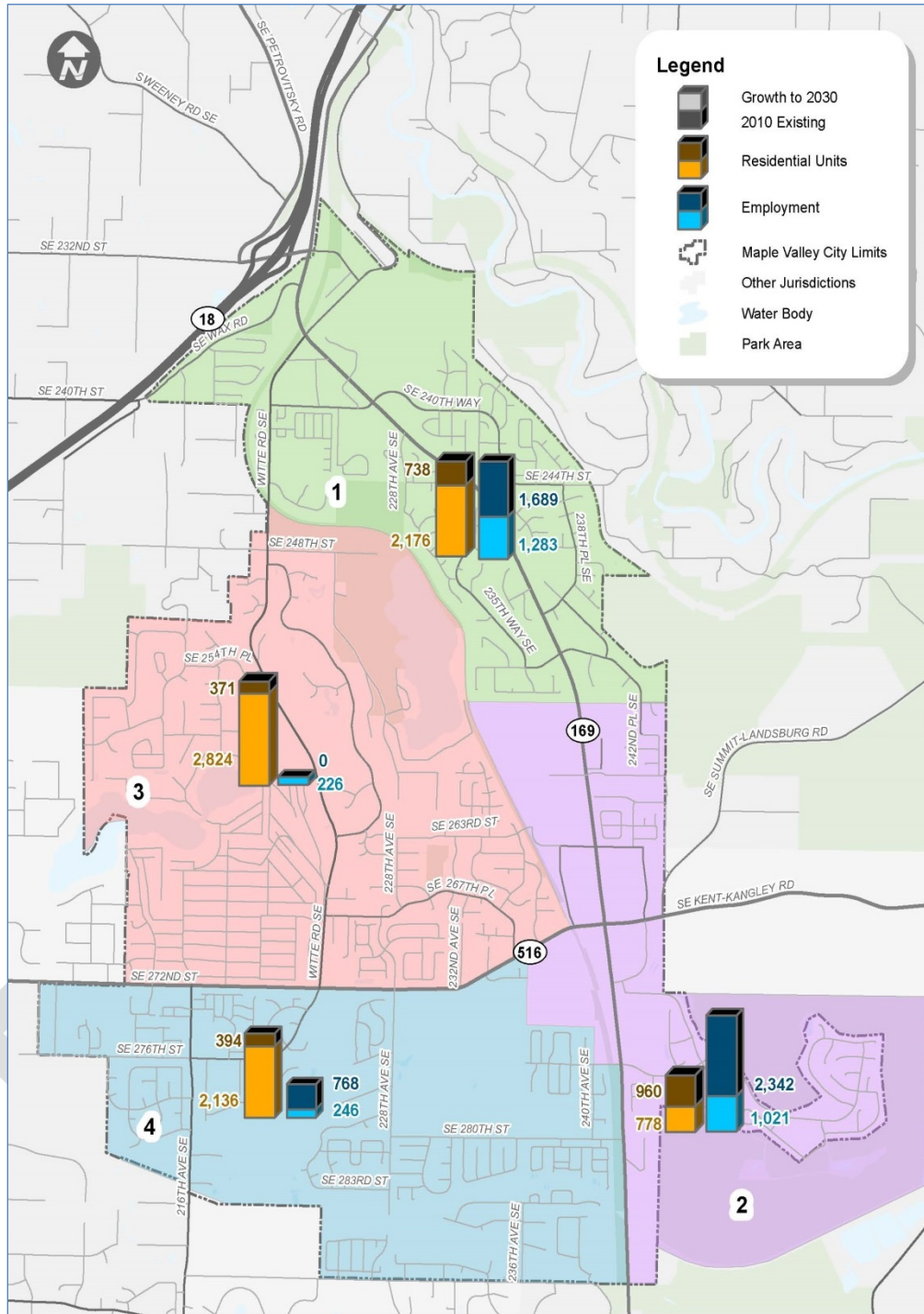


Figure 4.13 - City Land Use Growth by District (2010 to 2030)



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Household Growth Key Findings

The following summarizes key findings of the household growth:

- The full study area, including the City of Maple Valley, is estimated to grow by more than 31,600 dwelling units by 2030, representing an annual growth of 2.1 percent.
- Approximately 7,900 dwelling units were in the City in 2010.
- Within the City, the number of housing units is forecast to grow by more than 2,400 dwelling units, an annual growth of 1.4 percent between 2010 and 2030. This is a smaller rate of growth than is projected for most of the surrounding communities.
- In the Covington area, the number of housing units is forecast to grow by more than 6,100 dwelling units, an annual growth of 3.4 percent between 2010 and 2030.
- In the Black Diamond area, the number of housing units is forecast to grow significantly by more than 7,200 dwelling units, an annual growth of 7.5 percent between 2010 and 2030.
- In surrounding unincorporated areas of King County, household growth is estimated to grow annually between 1.1 to 3.3 percent.

Employment Growth Key Findings

The following summarizes key findings of the employment growth.

- 3.6 percent growth in employment within model study area.
- Total employment within the City is expected to more than double by 2030, from approximately 2,780 to 7,600 employees. This represents an annual rate of 5.1 percent.
- A majority of the growth in employment is projected to be in the retail (increase of 2,160 employees) and service (increase of 2,340 employees) categories.
- Growth in employment outside of the City is also estimated to double in the next 20 years. The large employment growth in the overall study area results in more than 22,000 new jobs by 2030.
- The City of Covington is estimated to continue to grow and attract jobs at a 3.7 percent annual rate.
- The City of Black Diamond is estimated to add over 2,200 jobs mostly in the service categories. This represents an annual rate of 9.2 percent from 2010 conditions.

Summit Place

Summit Place refers to the area previously referred to as the “Donut Hole” which is currently owned by King County. The area today includes a former golf course and road maintenance facility. A small neighborhood is also included in the district on the north side of the County property, just south of SR 516. King County and the City of Maple Valley formed an interlocal agreement to adopt a Joint Plan for Summit Place in 2010. Since 2010 the development plans for this area have changed to include the relocated Tahoma High School, no new homes, and new businesses that could include up to 580 new employees. This is compared to 1,600 new homes and businesses with 730 new employees assumed in 2010.



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City of Black Diamond

The land use growth expected to occur in the City of Black Diamond is an important consideration in developing the land use forecasts for Maple Valley. The land use growth assumed for Black Diamond is consistent with the major development plans for Lawson Hills and The Villages, two master planned communities that have been approved. As part of the development plans, two Environmental Impact Statements (EIS) were prepared by the City of Black Diamond that provided detailed land use data for each planned development. The information contained within each EIS was integrated into the Maple Valley travel demand model and is accounted for in the land use assumptions. The number of households and employees is expected to grow between 7 to 9 percent annually in the Black Diamond area due to these anticipated developments. To improve consistency between Black Diamond and Maple Valley planning efforts, the travel demand model forecasts were further refined to match the net new vehicle trips generated by the proposed development.

Travel Forecasting Model

A travel demand forecasting model was developed to assist in defining future transportation system needs. The model was constructed as part of the Transportation Element update. It is based on the City's previous model, but has been updated to reflect current conditions and forecast land use projections. The model uses the VISUM software package and forecasts weekday PM peak hour traffic volumes based on the 2030 land use forecasts. The model study area includes Black Diamond, Covington, and parts of Kent and unincorporated King County.

The model was calibrated to match existing base year traffic volumes (2010) and then used to develop a baseline 2030 traffic forecast. City, County, and State transportation improvement projects likely to be funded and built by 2030 were included in the future baseline model. To understand the need of City projects, the 2030 baseline model only includes City projects that are in design, construction, or recently built. The improvements were defined based on local agency Transportation Improvement Programs and the PSRC's Transportation 2040 Plan compilation of regional projects. The baseline projects were input into the travel demand model and the 2030 baseline forecasts were prepared. The 2030 baseline travel forecasts were used to determine where future operational and capacity deficiencies were likely to occur. A brief description of the baseline transportation projects are listed below.

Baseline Transportation Projects

- SR 169
SR 169 from Witte Road SE to 228th Avenue SE – Construct second southbound lane (now constructed as of 2015 update).
- Witte Road SE
Witte Road SE from SE 244th Place to SE 249th Place – Widen roadway, add sidewalks, and construct roundabout at SE 248th Street intersection (now constructed as of 2015 update).
- SR 516



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SR 516 from 160th Avenue SE to 164th Avenue SE – Add turn lanes and modify traffic signals.

- SR 18
SR 18 from Issaquah-Hobart Road to I-90 – Construct 4-lane divided highway.
- Four Corners
Four Corners area circulation roadways – Construct local streets per anticipated development.
- Summit Place
Summit Place area circulation roadways – Construct local streets per anticipated development.
- Black Diamond
Black Diamond area roadway improvements – Construct street improvements per anticipated developments and City of Black Diamond plans.

Baseline Analysis

The future baseline traffic analysis identified the need for transportation improvements throughout the City. Due to the residential and employment growth assumed to occur in the City, and the growth that is expected in Black Diamond, traffic volumes are estimated to increase significantly on the major corridors in the City such as SR 169, SR 516, Witte Road, and 216th Avenue SE. While the baseline improvement projects were assumed to be in place by 2030, the traffic forecasting and operations analysis highlighted the need to consider additional transportation investments throughout the City.

To address the issues identified in the baseline traffic analysis, improvement alternatives were identified by City staff. The improvement alternatives were evaluated using the City's travel demand model to determine whether the projects addressed the future deficiencies identified in the baseline analysis. The results of the alternatives analyses were used in developing a recommended 2030 transportation network with improvements.

Alternatives Analysis

Several proposed roadway connections and major highway widening projects were defined and added to the future baseline model. Separate model scenarios were created for the alternatives in order to evaluate the shifts in traffic and levels of service due to the proposed roadway connections or widening projects. Results from each alternative model scenario were reviewed in order to understand whether the proposed projects:

- Provided congestion relief along adjoining roadways and at intersections.
- Attracted a significant amount of vehicle trips to justify the need for the roadway.
- Reduced impacts on non-arterials.
- Supported future growth within the City.

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North City Connections

The improvements evaluated in the northern area of the City included two new road connections, further widening of SR 169 north of Witte Road SE, and spot improvements at the SR 169/Witte Road SE intersection.

The new SE 231st Street Connection will serve new development east of the Wilderness Village commercial area and create another north-south collector street. The specific alignment is dependent on developments in the area, and the intersection designs at either end of the corridor will need more detailed analysis once the alignment is identified. The SE 231st Street connection between Witte Road SE and SE 240th Way provides a new alternate north-south route east of SR 169. The amount of traffic that uses this new connection depends on the adjacent land use intensity, the roadway design (speed and lanes), and the congestion levels on SR 169. It is recommended to remain in the City's plan.

In addition to the SE 231st Street Connection, the SE 240th Street Extension, adding a third southbound lane along SR 169, and spot improvements at the SR 169/ Witte Road SE intersection all address future congestion along SR 169 between SE Wax Road and Witte Road SE. One way to address the issue is to add additional capacity along SR 169 (third southbound lane). Alternatively, the SE 240th Street Extension draws traffic volumes away from this segment of SR 169. The spot improvements at the SR 169/Witte Road SE intersection also reduce traffic bottlenecks along this section. The 240th Street NE extension to SE Wax Road continues to provide a major benefit to SR 169 intersection in north Maple Valley. Without this connection, traffic volumes along SR 169 at SE Wax Road and Witte Road SE would significantly increase. It is recommended that the SE 240th Street Extension be used to address congestion rather than widening SR 169 to three lanes in one direction. The SE 240th Street Extension also improves connectivity in the areas for both motorized and non-motorized travel.

The type of spot improvements to the SR 169/Witte Road SE intersection (turn lanes, signal control, or turn restrictions) depend on other projects, such as completion of the SE 231st Street Connection and major developments. A more detailed feasibility and circulation study is recommended prior to any design and construction, and would not occur until completion of the SE 231st Street Connection.

The SE 231st Street Connection, SE 240th Street Extension, and potential intersection improvements to the SR 169/Witte Road SE intersection were all carried forward into the plan project list.

SR 169 Corridor

Based on the 2011 Transportation Element analysis, it was recommended that SR 169 be five lanes between Witte Road SE and SE 280th Street. South of SE 280th Street it was recommended that SR 169 be widened in the southbound direction only until the City Limits. Since 2011, the City has made significant progress in adding this capacity to SR 169. Recent improvements include southbound widening between Witte Road SE and 228th Avenue SE, widening in both directions between SE 260th Street and SE 264th Street, and southbound widening between SE 271st Place and SE 276th



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Street. In addition, additional street network has been added in the Four Corners area that helps to remove local circulation trips from off the State highway. The alternatives analysis confirmed the need to continue to expand capacity along SR 169 as envisioned in the 2011 Transportation Element.

New development in the Four Corners area requires a well-defined interconnected street network to disperse traffic volumes and avoid overloading any one local access road. Similarly, direct access to SR 169 should be provided at regular intervals to avoid concentrating volumes at any one intersection. For example, this may include quarter-mile spacing of traffic signals, and one limited-access unsignalized intersection between signals. This has already occurred in many parts of the Four Corners area, but is particularly recommended in the area northwest of the SR 169/SE 264th Street intersection. As this area develops and as SR 169 is further widened north of SE 260th Street, it is recommended that a traffic signal be added at the intersection of SR 169 and SE 260th Street.

SR 169 widening in the two- to three- lane sections between SE 240th Street and SE 280th Street was carried forward into the transportation systems plan. The widening was divided into multiple projects that could be implemented over time as funding is available.

SR 516 Corridor

Based on the 2011 Transportation Element analysis, it was recommended that additional widening along the SR 516 corridor was needed. In addition, the extension of SE 271st Street (and associated local street connections to Summit Place) was recommended to avoid the need of expanding SR 516 to five lanes. The alternatives analysis confirmed the need to continue to expand capacity along SR 516 as envisioned in the 2011 Transportation Element.

On the west section of the corridor, the model indicated that widening SR 516 beyond a three-lane facility was entirely dependent on whether SR 516 was widened to five-lanes through the City of Covington. If it was widened to five-lanes, the modeling indicated the logical terminus of the five-lane widening would be at 216th Avenue SE. A significant amount of future demand is forecasted to use 216th Avenue SE, therefore only three-lanes are necessary along SR 516 to the east.

A new 228th Avenue SE connection across the railroad corridor in south Maple Valley would benefit residents south of the railroad corridor and reduce traffic demands at key locations along the SR 516 corridor. Traffic volumes would be reduced on 216th Avenue SE, SR 169, and at the intersection of SR 516 and Witte Road SE. In other words, this connection would help reduce traffic volumes at typically congested locations.

The SE 271st Street Extension, SR 516 widening to five-lanes between the western City limits and 216th Avenue SE, SR 516 widening to three-lanes between 216th Avenue SE and 236th Place SE (terminus of the SE 271st Street Extension), and the 228th Avenue SE railroad crossing were all carried forward into the transportation systems plan project list.

Witte Road Spot Improvements



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Based on outcomes of the Witte Road Corridor Study Update (February 2014), the intersections of Witte Road SE with SE 254th Place, 220th Avenue SE, and SE 268th Street would be improved to address some alignment and safety concerns. The alternatives analysis did not suggest any changes to the recommendations, and these improvements have been carried forward into the plan project list.

Traffic Forecasts

The results of the alternatives analysis were used to develop the framework for the recommended transportation network and ultimately the transportation systems plan. A recommended transportation network model scenario was created to estimate forecast 2030 traffic volumes within the City. The resulting 2030 daily and PM peak hour traffic forecasts are shown in Figure 4.14.

In general, forecast PM peak hour traffic volumes on SR 169 are expected to increase significantly with the widening of SR 169 to a five-lane highway through the City. Along SR 516, forecast traffic volumes are expected to increase by 80 percent due to the added capacity of widening it the corridor to five lanes west of 216th Avenue SE and the increased land use in Four Corners and Black Diamond.

Traffic volumes on Witte Road SE are forecasted to grow moderately partially due to the completion of the SE 240th Street Extension. Along 216th Avenue SE, south of SR 516, the forecast traffic volumes will continue to increase in the future due primarily to growth in Black Diamond.

The Four Corners area is estimated to have a significant increase in traffic volumes. New circulation roadways in the area provide alternatives to the state highways. The new SE 271st Street Extension is expected to attract over 500 vehicles in the future, enough to avoid widening SR 516 to five lanes east of 216th Avenue SE. The circulation roadways will help relieve future congestion at the SR 169/SR 516 intersection and reduce the need to widen the intersection beyond five lanes on each approach.

Compared to the forecasted 2030 volumes shown in the 2011 Transportation Element, most daily and PM peak hour traffic volumes are slightly lower in this 2015 update. This is due to some minor changes in 2030 land use assumptions within and outside the City as well as a the new 228th Avenue Connection. The main exception is a slight increase in traffic volumes on SR 516 between Witte Road SE and SR 169.

The resulting traffic forecasts were evaluated using the City's traffic operations model to identify the resulting levels of service (LOS).



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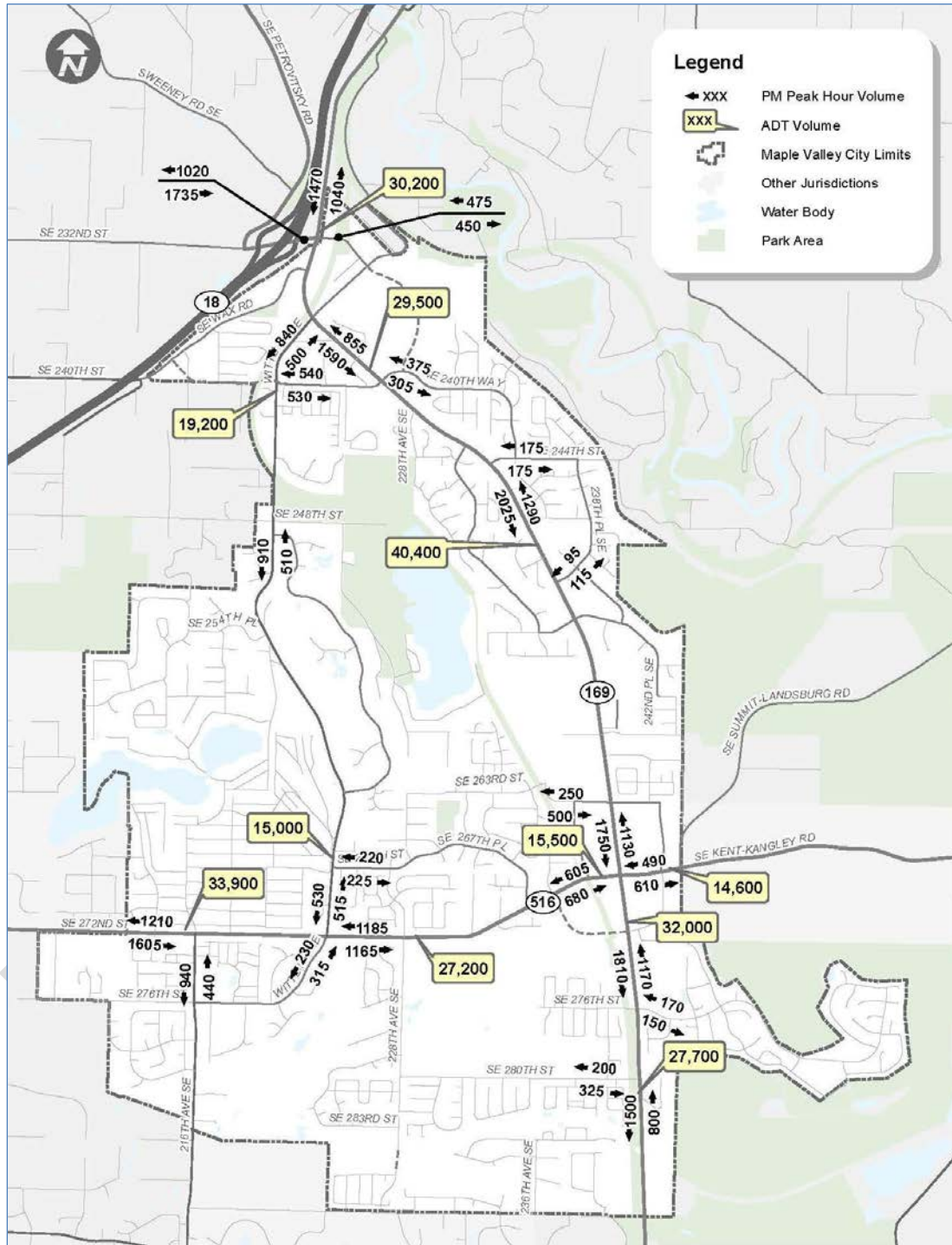


Figure 4.14 - Future (2030) Daily & PM Peak Hour Traffic Volumes



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Level of Service Standards

LOS standards establish the basis for the concurrency requirements in the GMA, while also being used to evaluate impacts as part of the State Environmental Protection Act (SEPA). Agencies are required to “adopt and enforce ordinances which prohibit development approval if the development causes the level of service on a transportation facility to decline below the standards adopted in the transportation element of the comprehensive plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with development” (RCW 36.70A.070(6)(b)). Therefore, setting the LOS standard is an essential component of regulating development and identifying planned improvements for inclusion in the Transportation Element.

Level of Service Definitions

Level of service is both a qualitative and quantitative measure of roadway and intersection operations. Level of service uses an “A” to “F” scale to define the operation of roadways and intersections as follows:




LOS A: Primarily free flow traffic operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delays at signalized intersections are minimal.

LOS B: Reasonably unimpeded traffic flow operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and control delays at signalized intersections are not significant.

LOS C: Stable traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower than average travel speeds.

LOS D: Small increases in traffic flow may cause substantial increases in approach delays and, hence decreases in speed. This may be due to adverse signal progression, poor signal timing, high volumes, or some combination of these factors.

LOS E: Significant delays in traffic flow operations and lower operating speeds. Conditions are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and poor signal timing.

LOS	What it Looks Like
A	
B	
C	
D	
E	
F	



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LOS F: Traffic flow operations at extremely low speeds. Intersection congestion is likely at critical signalized intersections, with high delays, high volumes, and extensive vehicle queuing.

If expected funding for improvements to meet future transportation needs is found to be inadequate and the City will not be able to meet their adopted LOS standard, then the City may pursue one or more of the following options:

- Lower the LOS standard for the system or for portions of the system that cannot be improved without a significant expenditure;
- Revise the City's current land use element to reduce density or intensity of development so that the LOS standard can be met; or,
- Phase or restrict development to allow more time for the necessary transportation improvements to be completed.

State Highway Level of Service Standards

The City of Maple Valley is served by SR 169 and SR 516. SR 169 is classified as a Highway of Statewide Significance (HSS). Per WSDOT's Highway Systems Plan, the LOS standards for HSS facilities are set forth by State law. State law sets LOS D for HSS facilities in urban areas and LOS C for HSS facilities in rural areas. Since SR 169 is located within the Maple Valley urban area, the LOS D standard applies. GMA concurrency requirements do not apply to HSS facilities, per State legislation.

SR 516 is a State Highway of Regional Significance, Tier 2. The level of service standard for regionally significant state highways in the central Puget Sound region is set by PSRC in consultation with WSDOT and the region's cities and counties. PSRC has established LOS D for SR 516 between SR 169 in Maple Valley and SR 515 in Kent. PSRC notes that it will measure the level of service for regionally significant state highways on a one-hour PM peak period basis. Furthermore, PSRC notes that local agencies will need to decide whether to apply concurrency to state highways of regional significance.

City of Maple Valley Level of Service Standards

The baseline traffic analysis showed the primary areas of congestion and capacity deficiencies within Maple Valley are expected along the SR 169, SR 516, and Witte Road corridors. The SR 169 and SR 516 corridors serve regional travel in addition to serving as primary travel corridors for Maple Valley. The alternatives analysis illustrated a need for significant improvements to both SR 169 and SR 516. In order to move these projects forward, significant new funding will be required from local, regional, and state sources. Individual intersections along these state highways will likely fall below the LOS D standards set by the State and PSRC prior to the City obtaining adequate regional and local funding for the needed improvements.

To address these concerns, the City redefined its level of service standards in 2010. The City's standards are divided into two parts. The first part is based on the weighted average level of service of key intersections along the two state highways. This will be used for concurrency review and monitoring of overall traffic operations. The second part of the level of service standard covers all other intersections in the City.



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Concurrency Level of Service Standards

The City has identified two groups of intersections on SR 169 and SR 516 as being the most critical in the overall operation of its transportation system. These include intersections in the north part of the City along SR 169 and in the south part of the City along SR 516.

North Concurrency Intersections

- SR 169 @ 231st Street
- SR 169 @ Wax Road
- SR 169 @ Witte Road
- SR 169 @ 240th Street

South Concurrency Intersections

- SR 516 @ SR 169
- SR 516 @ Witte Road
- SR 516 @ 216th Avenue

The City has established a standard of LOS D, based on the weighted average delay per vehicle, for the north and south groups of intersections. The levels of service for each individual intersection are calculated for the weekday PM peak hour using the Highway Capacity Manual, 2010 signalized intersection control delay methodology. The weighted average is calculated by summing the total delays at the group of concurrency intersections and then dividing by the sum of the total entering volumes for the same intersections. The weighted average is computed using the following equation for each concurrency group:

$$\text{Weighted Average} = \frac{\sum_{i=1}^n d_i * TEV_i}{\sum_{i=1}^n TEV_i}$$

where

- d_i = average delay in seconds per vehicle for each intersection
- TEV_i = total entering volume for each intersection
- i = concurrency intersection

The use of the weighted average delay for these groups of intersections provides an overall measure of how these two key state highways are operating. The methodology allows one or more of the intersections in each group to operate below LOS D, while still maintaining an overall average of LOS D or better.

Other Intersection Level of Service Standards

In addition to the use of a LOS standard based on the weighted average delay for the seven state highway intersections, the City also has established level of service standards for all other intersections (including other intersections along the state highways) in the City. The City will apply these standards to the weekday PM peak hour and to other time periods as appropriate based on the type and location of development.

- Signalized, Roundabout, and All-way Stop Controlled Intersections

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LOS D or better based on the average performance of all traffic movements at the intersection consistent with the methodologies in the *Highway Capacity Manual*, 2010.

- Two-way, Stop Controlled, Unsignalized Intersections

LOS D or better; except for two-way, stop controlled, unsignalized intersections with SR 169, SR 516, or Witte Road which is LOS E for the side street approaches. The LOS is based on the average delay per vehicle for each approach or separate traffic movement at the intersection using the methodologies in the *Highway Capacity Manual*, 2010. On a case-by-case basis the City may allow the level of service for traffic movements from the minor street at a two-way, stop controlled intersection to operate below the adopted standard if the Public Works Director (or designee) determines that no significant safety or operational impacts will result. As appropriate, mitigation will be identified and required to address potential impacts to safety or operations. Potential installation of traffic signals or other traffic control devices at these locations shall be based on the *Manual on Uniform Traffic Control Devices (MUTCD)*, the Transportation Element, and sound engineering practices. This allowance within the level of service standards is needed because the installation of a traffic signal or other traffic control device may not be warranted per the MUTCD or desirable based on the proximity of other current or planned traffic controls as identified in the Transportation Element.

Future Traffic Operations

2030 forecast traffic volumes for two transportation network conditions were analyzed: (1) baseline improvement projects only, and (2) with plan improvements. The results of the future baseline LOS analysis were used to develop the framework for the recommended transportation network, and ultimately, the long-term project list. The analysis provides a summary of future traffic operations with and without the long-term improvement projects, which are summarized in the transportation systems plan section of the Transportation Element.

The LOS analysis was conducted for the 2030 horizon year similar to the analysis conducted for the existing traffic conditions, but also included a review of the concurrency LOS measure. Figures 4.15, 4.16, and Figure 4.17 summarize the forecast intersection operations for baseline and with improvement scenarios during the average weekday PM peak hour.



Element 4

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Support Analysis

Intersection	2030 Baseline			2030 With Improvements		
	LOS ¹	Delay ²	Ctrl ³	LOS	Delay	Ctrl
<u>North Concurrency Intersections</u>						
SR 169/ SE 231st St	D	53	Signal	D	50	Signal
SR 169/ SE Wax Rd	F	115	Signal	C	22	Signal
SR 169/ Witte Rd SE	F	150	Signal	E	69	Signal
SR 169/ SE 240th St	D	47	Signal	E	57	Signal
Weighted Average⁴	F	95		D	49	
<u>South Concurrency Intersections</u>						
SR 169/ SR 516	F	99	Signal	E	77	Signal
SR 516/ Witte Rd SE	E	78	Signal	D	45	Signal
SR 516/ 216th Ave SE	D	46	Signal	C	25	Signal
Weighted Average⁴	E	78		D	51	

1. Level of Service, based on 2010 Highway Capacity Manual methodology.

2. Average delay in seconds per vehicle.

3. Intersection control: "Signal" is traffic signal; "Stop" has stop signs on minor street; "Round" is roundabout intersections.

4. Weighted average is calculated by summing the total delays at the group of concurrency intersections and then dividing the sum of the total entering volumes for the same intersections.

Figure 4.15 - 2030 Weekday PM Peak Hour Concurrency LOS

As shown in Figure 4.16, the weighted average intersection LOS for the North and South Concurrency Intersections is improved with completion of the long-term transportation projects. Without implementation of the long-term projects, the weighted average intersection LOS for the North and South Concurrency Intersections would fall below the City's LOS D standard.

In addition to the weighted average LOS, most of the individual concurrency intersections will also operate at LOS D or better with implementation of the full project list. Three intersections that still operate below LOS D with the improvements will be along SR 169 at Witte Road SE, SE 240th Street, and SR 516. These intersections are expected to operate at LOS E by 2030 with improvements. However, as noted above, the weighted average delay of the North and South Concurrency Intersections would be LOS D, thereby meeting the City's LOS standard.



Element 4

TRANSPORTATION

Support Analysis

Intersection	2030 Baseline			2030 With Improvements		
	LOS ¹	Delay ² (WM) ³	Ctrl ⁴	LOS	Delay	Ctrl
SR 169/ SE 244th St	D	32 (WB)	TWSC	A	9	Signal
SR 169/ SE 251st St	E	43 (WB)	TWSC	F	81 (WB)	TWSC
SR 169/ SE 264th St	D	42	Signal	D	55	Signal
SR 169/ SE 271st St	B	19	Signal	D	42	Signal
SR 169/ SE 276th St	D	35	Signal	C	21	Signal
SR 169/ SE 280th St	C	25	Signal	B	12	Signal
SR 516/ 228th Ave SE	C	34	Signal	D	49	Signal
Witte Rd SE/ SE 240th St	B	13	Signal	D	42	Signal
Witte Rd SE/ SE 248th St	C	23	Round	C	21	Round
Witte Rd SE/ SE 254th Pl	F	66 (EB)	TWSC	A	4	Signal
Witte Rd SE/ SE 268th St	E	42 (WB)	TWSC	C	21 (WB)	TWSC
SE 231st St/ SR 18 NB Ramps	C	21	Signal	C	24	Signal
SE 231st St/ SR 18 SB Ramps	D	42	Signal	D	54	Signal
SE Kent-Kangley Rd/ 243rd Ave SE	F	>200 (SB)	TWSC	A	9	Signal

1. Level of Service, based on 2010 Highway Capacity Manual methodology.

2. Average delay in seconds per vehicle.

3. Worst movement reported for stop-controlled intersections.

4. Intersection traffic control: "Signal" is traffic signal; "TWSC" has stop signs on minor approach; "Round" is a roundabout.

Figure 4.16 - 2030 Weekday PM Peak Hour LOS at Non-Concurrency Intersections

Unsignalized, two-way, stop-controlled intersections not expected to meet City LOS standards include SE 254th Place at Witte Road SE and at SE Kent-Kangley Road at 243rd Avenue SE. The high volume of vehicles expected in 2030 along Witte Road SE and SE Kent-Kangley Road do not allow for many gaps in traffic for vehicles to enter from side streets. However, these intersections may not meet traffic signal warrants. The City will monitor operations and safety at these locations and may identify additional improvements or restrictions, as needed, consistent with the level of service standards.



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Support Analysis

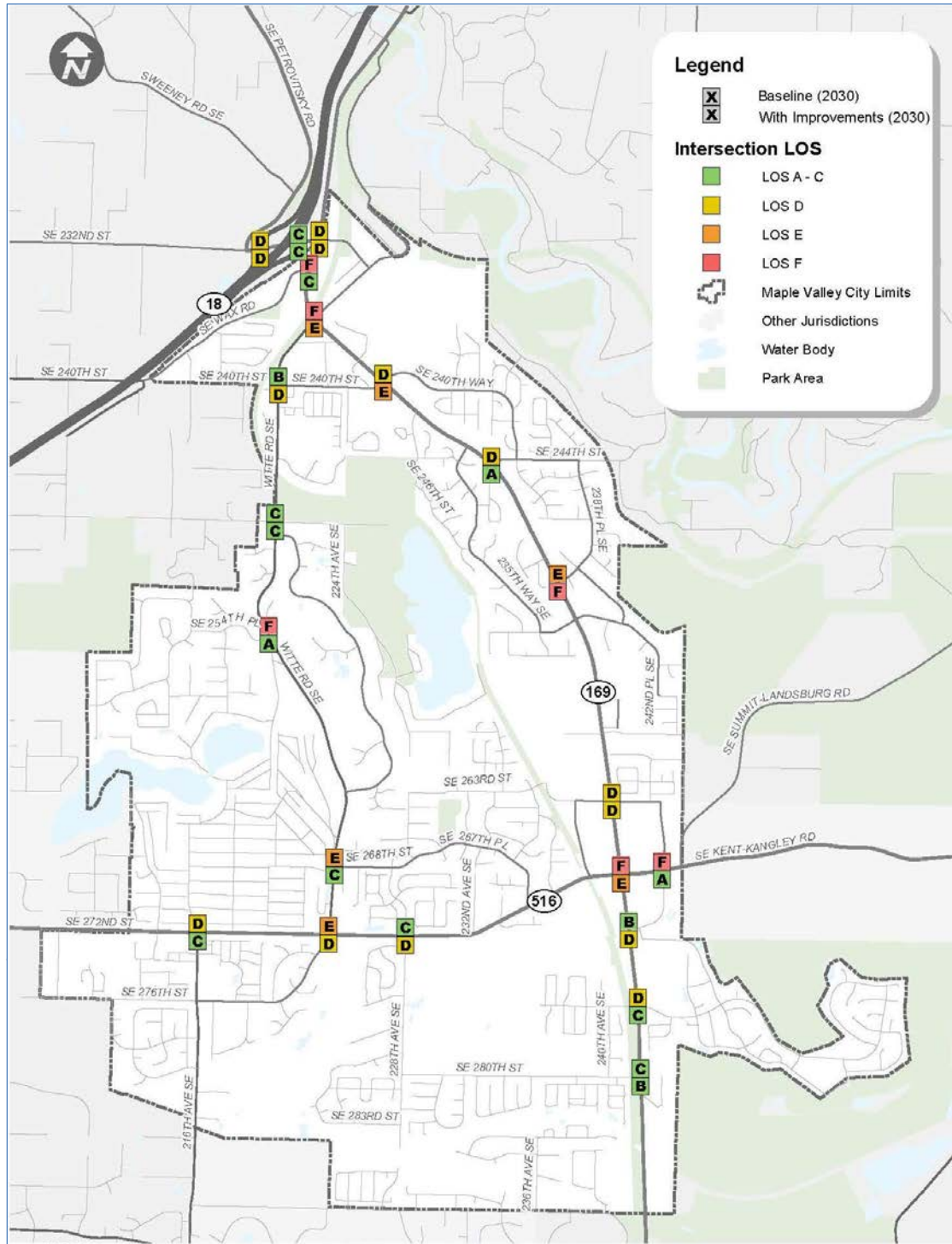


Figure 4.17 - (2030) PM Peak Hour Intersection Levels of Service

**TRANSPORTATION**

Support Analysis

TRANSPORTATION SYSTEMS PLAN

The transportation systems plan section of the Transportation Element provides a long-range strategy for the City of Maple Valley to address current and forecast transportation issues and identified needs, implement transportation goals and policies, and realize the intent of the community's Vision. The plan is based upon an analysis of the existing transportation system, forecasts of future travel demands, the anticipated availability of resources, and the desire of the City of Maple Valley to create an efficient transportation system that puts a priority on community livability. The plan builds upon the City's policies and standards and seeks to give specific shape to the City's transportation goals and vision.

The transportation systems plan focuses on four components of the transportation system:

- Streets and Highways.
- Public Transit and Travel Demand Management.
- Non-Motorized Facilities.
- Waterborne, Rail, and Air Transportation.

These are the basic elements of the transportation system upon which mobility within and through Maple Valley depends. The core of the transportation systems plan covers street and highway improvements with a focus on the major corridors within the City. The street system serves the primary movement of automobiles and truck traffic. The street system also provides the framework for other travel modes in the community, including transit, pedestrian, and bicycle modes.

Streets and Highways

Streets and highways serving Maple Valley provide for the general movement of people and goods. They also serve other travel modes, including pedestrians, bicyclists, and transit. The street and highway section identifies the functional roadway system, roadway design standards, designated truck routes, improvement projects and programs needed to maintain and expand the system, and general guidelines and strategies on access management.

Functional Classification

Roadway functional classification provides for a hierarchy of roadways. These classifications also act as a guide for future development of the overall street system. The purpose of the functional classification plan is to provide a hierarchy of arterial and local streets. Arterial streets serve higher traffic volumes and may have few access points. Local streets provide neighborhood circulation and access to individual parcels. Collector streets link arterials and local streets and may provide access to individual parcels. A well-connected system of streets enhances overall mobility and facilitates greater opportunities for pedestrian and bicycle travel. The roadway classifications shown in Figure 4.19 include principal arterials, minor arterials, collector streets, and local and business access streets.



Element 4

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Support Analysis

Figure 4.17 shows the classification of existing and planned streets within the City and its UGA. The specific alignments of new streets, specifically for areas identified as “future connections,” will be defined as part of the street design or during the review of new development proposals. The alignments will take into account property ownership, topography, environmental impacts, site design, traffic studies, and other considerations. Future street connections are needed in the vicinity of Lake Wilderness linking 228th Avenue SE to Lake Wilderness Country Club Drive, in the Four Corners subarea north of SE 264th Street and west of SR 169, and within Summit Place south of the new Tahoma High School. These new connections will provide improved emergency response, access, and connectivity for pedestrians, bicyclists, and vehicles in the neighborhood.

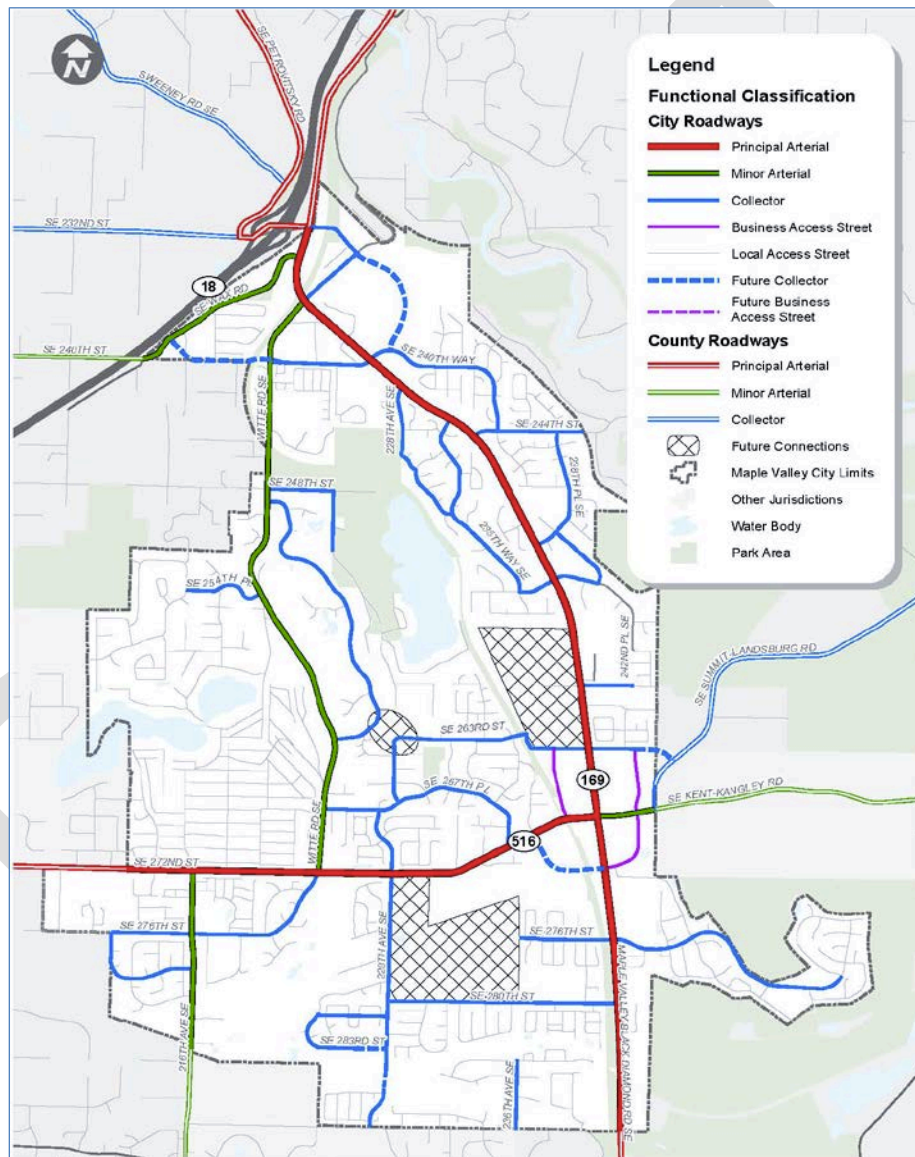


Figure 4.18 - City Functional Classification System



TRANSPORTATION

Support Analysis

The City roadway functional classification system is slightly different from the federal functional classification, particularly for roadways such as Witte Road, SR 516, and many of the collector streets. Witte Road is classified as a collector and SR 516 is classified as a minor arterial on the federal map. Other important collector streets are classified as local access streets or are not shown on the federal map, these include SE 240th Street, 228th Avenue SE, SE 231st Street and SE 280th Street.

Federal functional classification is one determinant of eligibility for federal transportation funding. All roadway projects using federal funds must be approved on the federally classified roadway system. Local access roadway projects are not eligible to use federal transportation funds unless they are a pedestrian or bicycle project, or a safety project using State transportation safety funds.

The City should prepare and submit an application to update the federal functional classification map so that it is consistent with the City classifications identified in Figure 4.18. The process includes review by both PSRC and WSDOT, with final approval by the Federal Highway Administration (FHWA). The changes should be focused on key corridors such as Witte Road, SR 516, SE 240th Street, 228th Avenue SE, SE 231st Street and SE 280th Street.

Functional Classification	Description
Principal Arterials	Regionally significant streets that link communities while also connecting important locations within the City. Principal arterials most often facilitate the system's largest traffic volumes. Access to local streets and driveways is discouraged.
Minor Arterials	Major streets that provide important intra-city connections, but may also play a regional role. Access to local streets is encouraged while driveway access is discouraged.
Collector Streets	Intra-community streets connecting residential neighborhoods with commercial and activity centers or principal and minor arterials. Driveway access is often provided along these routes.
Local and Business Access Streets	Streets providing circulation within neighborhoods or commercial areas and direct access to abutting properties.

Figure 4.19 - Functional Classification Definitions

Roadway Design Standards

The City of Maple Valley adopted Roadway Standards in 2004 which sets specific and consistent road design elements. The standards include items such as right-of-way needs, pavement width, type and width of pedestrian and bicycle facilities, and roadway and intersection radii. The standards also provide requirements for the location and installation of utilities within the right-of-way.

The standards are intended to support the City's goals in providing adequate facilities to meet the mobility and safety needs of the community, as well as complying with storm water management, sensitive areas, and other regulations. The standards are intended to assist design professionals and developers for all new and reconstructed roadways and right-of-way facilities, both public and private, within the City.



TRANSPORTATION

Support Analysis

Truck Routes

A significant amount of trucking activity occurs in the City due to the surrounding gravel mines and rock quarries east and south of the City. Local industry and surrounding forestry/agricultural uses generate truck traffic as well. Trucks have a significant impact on traffic operations, safety, and roadway maintenance. They also impact air quality and noise levels in the City. The City has designated only principal arterials and one minor arterial as truck routes. The 2004 Road Standards are defined to support truck use along these routes.

The primary routes for trucks traveling through the City are the two state highways: SR 169 and SR 516. The other truck route includes Kent-Kangley Road, east of the SR 516/SR 169 intersection at Four Corners. These routes provide connections from the surrounding land uses to the regional transportation system. SR 169 is the only north-south arterial for trucks heading between Black Diamond and Renton. SR 516 and Kent-Kangley Road provide an east-west arterial through the City. If trucks have an origin/destination within the City, they should limit travel on non-designated streets to the shortest practical travel route between the origin/destination and a designated truck route.

Transportation Improvement Projects

Based on the evaluation of existing and forecast traffic volumes, traffic operations, and safety, a recommended list of transportation improvement projects were defined. The improvements address safety, existing capacity deficiencies, and roadway preservation. They also cover upgrades to existing roads and construction of new roadways and interconnected street systems to support the forecast economic development and growth in the City and its UGA. The projects incorporate needs for pedestrians, bicyclists, and transit service that will use the same corridors. The projects were categorized into the following four types of projects:

- SR 169 Improvements (Maple Valley – Black Diamond Road SE).
- SR 516 Improvements (SE Kent-Kangley Road).
- Local Arterial Improvements.
- New Local Roadway Projects.

A brief description of each project is presented in Figure 4.20. Figure 4.21 shows the location of each project. Figure 4.20 identifies the roadway or intersection, the project limits, a description of the improvements, and a planning level cost estimate. A map identification number is included on the table to assist in referencing the projects shown on the figure.

Planning level cost estimates were prepared for each project based on typical per unit costs, by type of roadway and scope of the improvement. Where costs had been calculated as part of ongoing design projects, they were used instead. The cost estimates include allowances for right-of-way acquisition, based on generalized needs to meet the City's street standards. Adjustments to construction costs were included, as needed, to reflect any specific implementation issues, such as environmental impacts or impacts on adjacent properties.



TRANSPORTATION

Support Analysis

Key Project Changes in 2015 Transportation Element Update

The project list in Figure 4.20 was updated from the 2011 Transportation Element based on the 2015 conditions and updated analysis. Projects 101, 105, and 116 have been completed and were removed from the project list. Projects 108 and 111 were partially constructed and the project list has been updated to reflect the remaining portions of the projects. Project 108 includes the addition of a traffic signal at SR 169 and SE 260th Street. Project 132 is a new 228th Avenue SE connection across the BNSF railroad corridor. Project 133 is a new traffic signal or roundabout at SE Kent-Kangley Road/242nd Avenue SE to address a future LOS deficiency and improve local circulation in the Four Corners area.



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Support Analysis

Map ID	Title and Location	Description	Project Cost ¹ (\$1,000)
SR 169 Improvements (Maple Valley - Black Diamond Road SE)			
102	SR 169/Witte Rd SE Intersection	Investigate various design options at the intersection that would be dependent on other projects, such as completion of the SE 231st St Connection. Would require a more detailed feasibility and circulation study, and could not occur until completion of the SE 231st St Connection.	\$900
103	SR 169/SE 240th St Intersection	Construct second WB left-turn lane and EB right-turn lane. NB and SB approaches would both be one left-turn lane, one through lane, and one through/right-turn shared lane.	\$1,160
104	SR 169/SE 244th St Intersection	Install traffic signal to provide for improved operations and reasonable access from the minor approach (SE 244th St).	\$470
106	SR 169 Widening (Witte Rd SE to SE 244th St) <i>Phase C</i>	Construct second SB lane on SR 169 from 228th Ave SE to SE 244th St and second NB lane on SR 169 from 228th Ave SE to Witte Road SE. Provide center left turn lane/pockets where warranted. Provide curb, gutter, bike lanes, and sidewalks.	\$5,850
107	SR 169 Widening (228th Ave SE to SE 244th St) <i>Phase E</i>	Construct second NB lane on SR 169 from SE 244th St to 228th Ave SE. Provide curb, gutter, bike lane, and sidewalk on east side.	\$2,500
108	SR 169 Widening (SE 255th St to SE 260th St) <i>Phase D</i>	Extend second SB and NB lanes on SR 169 from SE 260th St to SE 255th St. Provide center left turn lane/pockets where warranted. Install traffic signal at the SE 260th St intersection. Provide curb, gutter, bike lanes, and sidewalks on both sides.	\$5,310
109	SR 169 Widening (SE 244th St to SE 255th St) <i>Phase F</i>	Construct second SB lane on SR 169 from SE 244th St to SE 255th St. Provide center left turn lane/pockets where warranted. Provide curb, gutter, bike lane, and sidewalk on the west side.	\$8,480
110	SR 169 Widening (SE 244th St to SE 255th St) <i>Phase G</i>	Construct second NB lane on SR 169 from SE 255th St to SE 244th St. Provide curb, gutter, bike lane, and sidewalk on the east side.	\$5,600
111	SR 169 Widening (SE 271st St to SE 276th St) <i>Phase B</i>	Construct second NB lane SE 271st St to SE 276th St. Provide curb, gutter, bike lane, and sidewalk.	\$590
112	SR 169 Widening (SE 276th St to SE 280th St) <i>Phase H</i>	Construct a second SB lane on SR 169 from SE 276th St to SE 280th St. Provide center left turn lane/pockets where warranted. Provide curb, gutter, bike lane, and sidewalk on the west side.	\$1,970
113	SR 169 Widening (SE 276th St to SE 280th St) <i>Phase I</i>	Construct a second NB lane on SR 169 from SE 276th St to SE 280th St. Provide curb, gutter, bike lane, and sidewalk on the east side.	\$1,930



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114	SR 169 Widening (from SE 280th St to South City Limit) <i>Phase J</i>	Construct second SB lane on SR 169 from SE 280th St to south city limit. This will convert SB approach at SE 280th St intersection to through lane and through/right-turn shared lane. Provide curb, gutter, bike lane, and sidewalk on the west side.	\$3,210
115	SR 169 Intelligent Transportation System Implementation (SE 231st St to SE 280th St)	Upgrade signal controllers, install fiber, and ITS equipment along the SR 169 corridor between SE 231st St and SE 280th St. Equipment includes new controllers and closed circuit video cameras.	\$0 (funded by WSDOT)
SR 516 Improvements (SE Kent-Kangley Road)			
117	SR 516 (207th Ave SE to 216th Ave SE) <i>Phase B</i>	Construct second EB lane on SR 516 from west city limit to 216th Ave SE. Construct second WB lane on SR 516 from 1,000 ft east of 216th Ave SE to west city limit. Include curb, gutter, bike lanes, and sidewalks. Provide center left turn lane/pockets where warranted. Improve 216th Ave SE intersection.	\$4,320
118	SR 516 (218th Ave SE to 228th Ave SE) <i>Phase C</i>	Widen to 3 lanes. Install new curb, gutter, bike lane, and sidewalk on the south side for the entire length and the north side west of Witte Road. Construct center left turn lane/pockets, where warranted. Construct NB right-turn lane. Left-turn signal pockets and signal phasing provided at each approach.	\$4,860
119	SR 516 (228th Ave SE to 236th PI SE) <i>Phase D</i>	Widen to 3 lanes. Install new curb, gutter, bike lane, and sidewalk on both sides. Construct center left-turn lane/pockets, where warranted.	\$3,870
Local Arterial Improvements			
120	Witte Rd SE (SE 254th PI to SE 256th PI)	Construct 3 lane roadway (center median/turn lane) from north of SE 254th PI to the south of SE 256th PI. Close direct access from 220th Ave SE to Witte Rd. Realign SE 256th St for improved intersection angle. Install traffic signal at SE 254th PI/Witte Rd SE, when warranted.	\$1,520
121	Witte Rd/SE 268th St Intersection	Construct center turn/merge lane along with curb, gutter, and sidewalks.	\$480
122	216th Ave SE (SR 516 to South City Limit)	Widen to 3 lanes. Install new curb, gutter, bike lane, and sidewalk on both sides. Construct center left turn lane/pockets where warranted.	\$2,250
123	SE 240th St (Witte Rd to 224th Ave SE)	Widen to 3 lanes through frontage improvements on north side of street. Install new curb, gutter, bike lane and sidewalks. Construct center left turn lane.	\$1,940
124	Witte Rd SE (SR 169 to SE 240th St)	Reconstruct roadways to 3 lanes. Install new curb, gutter, bike lanes, street lights, and sidewalk on the east side. May include retaining wall to the west.	\$2,720
125	SE 276th St (SE 216th St to SR 516)	Reconstruct roadway. Install new curb, gutter, bike lanes, street lights, and sidewalks.	\$9,610



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126	SE 231st St (SR 169 to Witte Rd) <i>Phase A</i>	Reconstruct roadway to 3 lanes (one NB lane, one SB lane, and center median/turn lane) between SR 169/SE 231st St intersection and SE Witte Rd. At SR 169 intersection: construct second WB through lane on east leg; WB approach would have left-turn lane, through lane, and through/right-turn shared lane. Provide curb, gutter, bike lanes, and sidewalks.	\$1,480
New Local Roadway Projects			
127	SE 231st St Connection (Witte Rd to SE 240th St) <i>Phase B</i>	Construct 3 lane roadway (one NB lane, one SB lane, and center median/turn lane) between SE Witte Road and SR 169/SE 240th Street intersection vicinity. Provide curb, gutter, bike lanes, and sidewalks.	\$10,140
128	SE 240th St Extension (Witte Rd to Wax Rd)	Construct 2/3 lane extension of SE 240th St between SE Wax Road and Witte Rd SE. Provide center left turn lane/pocket where left turns are likely. Install signal or roundabout at new SE Wax Rd intersection. Reconfigure Witte Rd SE intersection: On EB approach, add right-turn lane, through-lane, and left-turn lane. Provide left-turn pockets on all approaches. Provide curb, gutter, bike lanes, and sidewalks.	\$10,910
129	SE 264th St Extension (SE 242nd Ave to Summit-Landsburg Rd)	Construct 2 lane roadway with curb, gutter and sidewalks between 242nd Ave SE to SE Summit-Landsburg Rd to promote improved circulation in the Four Corners subarea.	\$2,880
130	SE 271st St Extension (SR 169 to 236th PI SE)	Construct new 3 lane road with curb, gutter, bike lanes, and sidewalks (one EB lane, one WB lane and center turn lane) on the new alignment between SE 271st PI/SR 169 intersection and 236th PI SE/SR 516 intersection. Future development would provide a connection between the Extension and the Summit Place development area. At 236th PI SE/SR 516 intersection, install traffic signal or roundabout and provide turn lanes.	\$6,420
131	240th Ave SE Connection (SE 277th PI to SE 279th St)	Connect 240th Ave SE together to provide a local access connection between SE 276th St and SE 280th St.	\$790
132	228th Ave SE Connection (SE 283rd St to SE 286th St)	Construct 2-lane roadway across the railroad corridor. Railroad crossing will be at-grade with signals. Provide curb, gutter, bike lanes, and sidewalks.	\$2,220
133	SE Kent-Kangley Rd/ 242nd Ave SE	Install traffic signal or roundabout to provide for improved operations and better local circulation.	\$470

1. Costs in \$1,000s of dollars (2011\$).

2. EB=eastbound; WB=westbound; NB=northbound; SB=southbound.

Figure 4.20 - Transportation Improvement Projects



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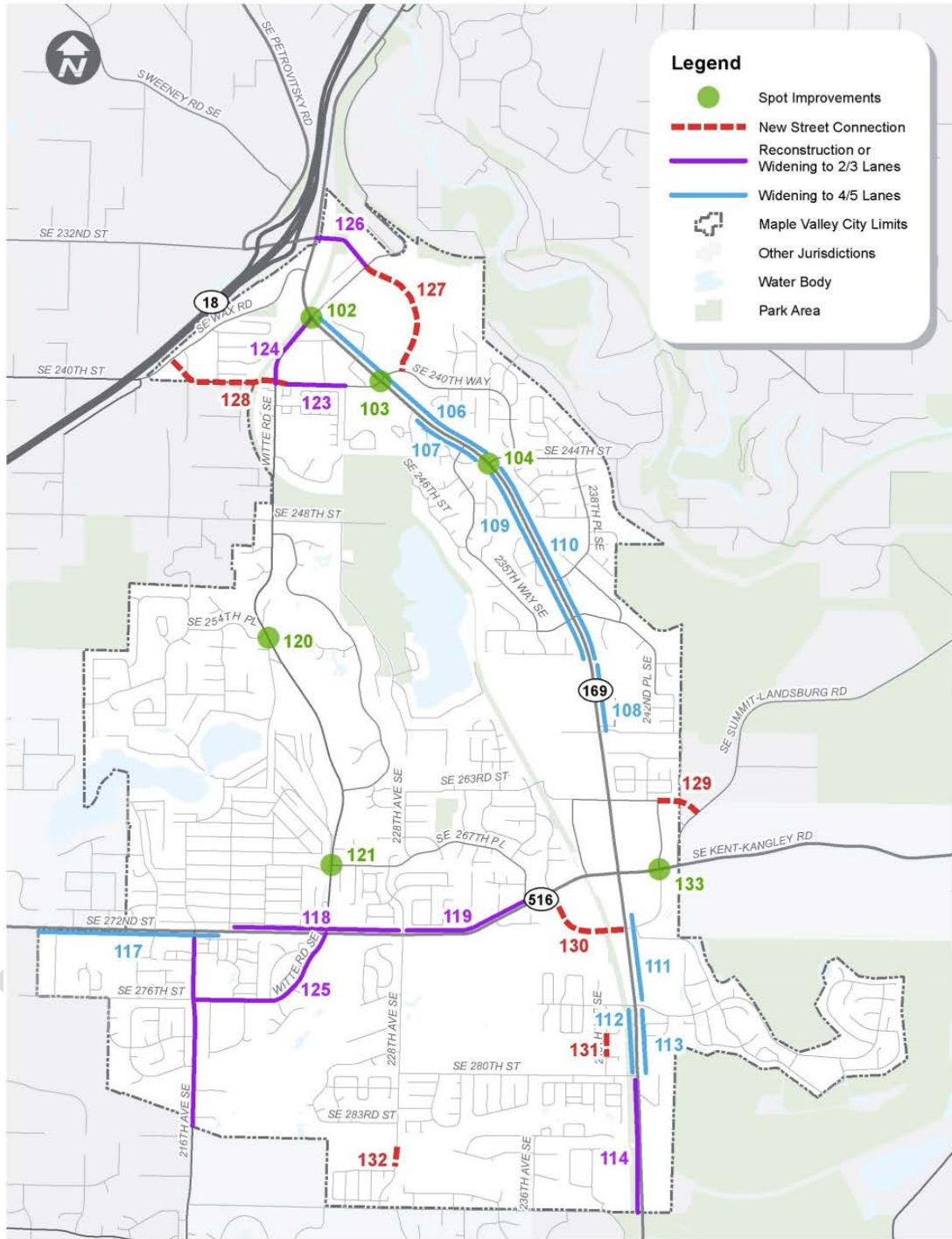


Figure 4.21 - Transportation Improvement Projects

**TRANSPORTATION**

Support Analysis

SR 169 Improvements (Maple Valley – Black Diamond Road SE)

SR 169 is a critical highway for the region and for each local community along the corridor. It is the primary route for Cities such as Maple Valley and Black Diamond. Improvements are needed within the City of Maple Valley to increase capacity, improve safety, enhance peak hour traffic operations, and to upgrade the facilities to urban design standards. The future analysis indicates that SR 169 should be widened to four or five lane cross-sections to accommodate the anticipated land use growth in the City and the surrounding communities. The improvements are consistent with the needs identified in WSDOT's SR 169 Route Development Plan completed in 2007. The widening will be accomplished in phases with separate projects listed along SR 169 in Figure 4.21 and shown in Figure 4.22. Since SR 169 is designated a Highway of Statewide Significance, implementation of the improvements will depend on funding by WSDOT or other outside sources as the City does not have the financial means to implement projects along this important regional highway.

Projects 102 through 104 focus on improving traffic operations at key intersections in the northern section of the City. Traffic volumes at these intersections are sensitive to major new roadway projects in the area, and the specific improvements will be confirmed based on results of a recommended Wilderness Village circulation and feasibility study that will need to be conducted at the outset of any of these new roadway improvements. Intersection improvements at SR 169/SE 260th Street (added traffic signal) are included as Project 108.

Projects 106 through 113 reflect widening only along one side of the highway at a time due to funding and timing constraints. Project 115 is intended to improve traffic signal operations, coordination, and management from SE 231st Street to SE 280th Street. WSDOT is leading and funding the signal and Intelligent Transportation System project. The widening projects would add curb, gutter, and sidewalk.

SR 516 Improvements (SE Kent-Kangley Road)

Anticipated future development in the southern areas of Maple Valley and in the City of Black Diamond will require additional capacity improvements along SR 516 between the west city limits and SR 169 to support forecast travel demand. A total of three projects have been identified Figure 4.20 and are shown in Figure 4.21. Implementation of the improvements will depend on funding by WSDOT or other outside sources as the City does not have the financial means to implement projects along this important regional highway.

West of 218th Avenue SE, SR 516 would be widened to five lanes (Project 117). This includes providing additional lanes to the SR 516/216th Avenue SE intersection. It was assumed that SR 516 would be widened to five lanes through the City of Covington before five lanes are needed in this section of Maple Valley. The City should evaluate interim improvement options along the segment of SR 516 between 216th Avenue SE and 218th Avenue SE to address existing safety and operational issues related to access into and out of the Cherokee Bay neighborhood.

East of 218th Avenue SE, SR 516 would be widened to three lanes (Projects 118 and 119). With additional local circulation roadways within the southern parts of the City, this section of SR 516 operated acceptably at three lanes. However, improvements to intersection of SR 516 and Witte



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Road SE would be needed (See Project 118). The SE 271st Street Extension (Project 130) plays a key role in reducing traffic volumes along SR 516.

Local Arterial Improvements

This category of projects includes capacity, safety, and road standard improvements along other City arterials and streets. A total of seven projects have been identified along City roadways and are listed in Figure 4.21 and shown in Figure 4.22.

Projects 120 and 121 would better manage access between Witte Road SE and side streets. This would improve safety in the area, and improve capacity along Witte Road SE. The addition of traffic signals would likely not be warranted due to lower side street volumes.

Projects 122 and 123 would widen roadways to three lanes reflecting their transition from rural to urban arterials. The widening projects would add curb, gutter, and sidewalk.

Street preservation and rehabilitation projects along Witte Road, Projects 124 and 125, would add curb, gutter, and sidewalk. SE 231st Street would also be upgraded to a three lane roadway between SR 169 and Witte Road as the roadway is extended south to SE 240th Street (Project 126).

New Local Roadway Projects

Seven new arterial roadways were identified to support future development within the City. The SE 231st Street Connection (Project 127) is a new roadway that will serve future commercial development east of SR 169 in the Wilderness Village Subarea. Another project will extend SE 240th Street west from Witte Road to Wax Road. The new SE 240th Street Extension (Project 128) is estimated to reduce delays along SR 169 within Wilderness Village and provide better access for vehicles headed to/from areas west of the City.

In order to improve circulation in the southern part of the City and the SR 169/SR 516 intersection in the Four Corners Subarea, the SE 271st Street Extension (Project 130) is to be built between SR 516 and SR 169. The new roadway, along with extension of SE 264th Street (Project 129) and a new signal or roundabout at SE Kent-Kangley Road/242nd Avenue SE (Project 133), will provide improved operations and better circulation within Four Corners and reduce the need to widen the SR 169/SR 516 intersection beyond the five lane cross-section. The SE 271st Street Extension allows SR 516 to remain at three lanes by providing an internal connection to the Summit Place area. Project 132 will allow City residents south of the railroad corridor to connect to the City of Maple Valley without using (and without contributing to) the congested corridors of SR 169 and 216th Avenue SE. To reduce construction costs, the crossing is anticipated to be at-grade with signals. However, approval of a new at-grade railroad crossing may be difficult.

Local Streets

Improvement to or construction of new local streets are not explicitly defined in the long-range plan and are assumed to be built through developer mitigation requirements or Local Improvement Districts (LIDs) based on community support. Local street system plans may be prepared as part of future neighborhood or subarea studies. For example, increased commercial and residential



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development within the Four Corners and Summit Place subareas will need to be balanced with appropriate circulation roadways to allow alternate access routes and provide acceptable levels of roadway system performance. The actual alignment of the future circulation roadways will be determined based on property boundaries, environmental impacts, and engineering considerations.

Maintenance Program

To maximize the use and efficiency of the existing and future transportation infrastructure, the City of Maple Valley will continue with a comprehensive, systematic maintenance program. The program will evaluate arterials and local roadways for pavement condition, signage, sight distance restrictions (such as vegetation blocking sight lines), and neighborhood traffic impacts. Traffic control devices, including traffic signals, should be monitored and serviced regularly. As needed, the program will also be used to evaluate speed limits based on functional classification, design, and roadway conditions.

The City's Pavement Management System (PMS) provides a consistent and systematic approach for identifying overlay projects each year. The PMS also provides input regarding the need to rebuild existing streets, instead of performing an overlay.

To assure that the existing and future transportation infrastructure is preserved in a cost-effective manner, the City will allocate annual budget resources to maintaining existing infrastructure.

Public Transit and Transportation Demand Management

In order to provide viable transportation alternatives, the City of Maple Valley recognizes the importance of transit and travel demand management programs. In general, these programs build on regional programs with some refinements to reflect the specific needs of the City.

Transit Plan

The Transportation Element has been coordinated with King County Metro Transit's 6-Year Development Plan. Transit service in Maple Valley is focused on the SR 169 corridor and the Park-and-Ride lots north of Wilderness Village and in the Four Corners area. King County Metro Transit regularly reviews its service plans and route structure to address possible improvements or reductions in service.

To support future development activity, the City encourages King County Metro Transit to consider additional routes to provide adequate coverage and increased service frequency, especially on the weekends. Increased service frequency and coverage is desired by the City to make transit use more convenient to meet the growing local travel demands. The Maple Valley Transportation Element provides for the following transit/public transportation services and facilities:

- Regional Transit Routes
King County Metro Transit Routes 143, 168, and 907 should continue to be enhanced to provide regional transit services between Maple Valley, Renton, Kent, and Seattle. Changes to future routes should be consistent with the needs of the Maple Valley community and



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should be based on a collaborative route planning process involving the residents of Maple Valley.

- Park-and-Ride Facilities

To support future City growth and increases in transit ridership, a new park-and-ride facility at or near the intersection of SR 516 and 216th Avenue SE should be investigated. This facility will allow more people to gain access to transit services without having to travel through the most congested locations in the City. The new facilities should be coordinated with additional service improvements along the SR 516 corridor.

- Regional Commuter Rail Service

WSDOT and other partner agencies have completed the Southeast King County Commuter Rail Study which evaluated the feasibility of commuter rail service along the existing BNSF Stampede Pass rail corridor that bisects the southern part of the City. The study resulted in determining that commuter rail service along this rail corridor as not being feasible.

- Carpooling and Vanpooling

King County Metro Transit should continue to offer tools to encourage carpooling and vanpooling by City residents. The City will work with King County Metro Transit to increase awareness that carpooling and vanpooling programs are provided.

- Transit Accessibility

The City will coordinate with King County Metro Transit in the evaluation of accessibility to public transportation to/from future developments. The City's road standards require sidewalks on all streets thereby supporting transit service accessibility.

The City will continue to work with King County Metro Transit to ensure high-quality transit services and facilities are maintained as the City continues to grow.

Transportation Demand Management Program

In addition to potential future increases in transit service, transportation demand management (TDM) programs can support the mobility needs of the community. The TDM programs target travel behavior rather than the transportation infrastructure. These programs should be coordinated with Metro Transit, King County, and PSRC to provide a broader basis for reducing single-occupant vehicles and expanding alternative transportation choices.

Maple Valley is a growing community with increased urban levels of development, especially in the Wilderness Village and Four Corners commercial areas. TDM strategies are typically most effective in denser and larger urban settings. However, TDM program strategies coordinated with regional agencies can provide alternatives for residents and employees within Maple Valley. The Washington Commute Trip Reduction Law (RCW 70.94.521) requires TDM performance targets for firms with over 100 employees. However, the Commute Trip Reduction program does not currently apply to



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Maple Valley because the area lacks large employers. Potential TDM strategies for the City of Maple Valley include the following options:

- Flexible/Alternative Work Schedules
Flexible work schedules allow employees to adjust start/end times to accommodate carpools, vanpools, or transit options. Alternative work schedules may be used to reduce the number of days an employee commutes during peak travel periods. These programs help reduce the need for adding capacity to highways and arterials, and reduce the levels of peak hour congestion.
- Telecommuting
The use of telecommunications technology can allow some employees to work from home. This reduces the need for travel to/from a work site for some week days.
- Site and Street Design
Sidewalks and/or other hard surface pathways that connect a development to adjacent pedestrian and bicycle facilities should be provided. Site designs should provide reasonably direct pedestrian access between arterials or collectors and existing or future transit stops. Transit shelters should be considered along arterial streets where the number of transit riders warrants them.

Non-Motorized Facilities

Bicycle, pedestrian, and equestrian facilities play a vital role in the City's transportation environment. The non-motorized transportation system is comprised of facilities that promote mobility without the aid of motorized vehicles. A well-established system encourages healthy recreational activities, reduces vehicle demand on City roadways, and enhances safety within the community.

The City desires to have sidewalks and bike lanes on arterial roadways, unless special circumstances make it prohibitive. The City has an annual program to enhance non-motorized facilities. Segments of arterials and collectors that do not have sidewalks, bike lanes, or adequate walkways on both sides of the street would be improved as part of the identified improvement projects or through the annual non-motorized facilities program. Greater details on existing and planned pedestrian and bicycle facilities are provided in the *Maple Valley Non-motorized Transportation Plan* (March 2013). As a separate publication, the *Non-Motorized Transportation Plan* was developed to directly address non-motorized elements as part of the Maple Valley Comprehensive Plan and the vision of Maple Valley citizens as expressed in a number of planning and design efforts.

The *Non-Motorized Transportation Plan* is consistent and supportive of a number of other planning efforts, including the City's Transportation Element; Road Standards; the Parks, Recreation, Cultural and Human Services Plan; and efforts by citizen organizations in the broader east King County area to identify regional connections.



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Waterborne, Rail, and Air Transportation

There are no airports in the immediate Maple Valley planning area. Regional, national, and international air travel for Maple Valley is provided via Seattle-Tacoma International Airport, located approximately 15 miles west of Maple Valley. The airport can be accessed via SR 169 or SR 516.

The Burlington Northern Santa Fe (BNSF) railroad tracks bisect the southern residential areas of the City. This railroad line is referred to as the Stampede Pass route and is a mainline used to ship freight to/from the east side of the state and beyond. BNSF reactivated the line in 1996 to address projected growth at the ports. The Stampede Pass tunnel located near the crest of the Cascade Mountain Range is below railroad height standards and double-stacked container cars are prevented from using the line. BNSF train schedules indicate that two trains use the route each day, with additional trains using the tracks intermittently. No rail passenger service is offered along the rail line. One controlled crossing is located at the southern city limits at 216th Avenue SE.

There is no waterborne transportation serving Maple Valley. The Transportation Element does not identify waterborne transportation as a component of the City's transportation system.

FINANCE AND IMPLEMENTATION PROGRAM

The transportation improvement projects must be funded and implemented to meet existing and future travel demands in and around the City of Maple Valley. A summary of project costs and a strategy for funding the projects over the life of the plan are presented. In addition, implementation strategies are discussed, including continuing coordination with WSDOT and other agencies to prioritize and fund improvements along SR 169 and SR 516, two regional state highways serving southeast King County. Other strategies call for monitoring and refining City development regulations, such as the concurrency and traffic impact fee programs to ensure development does not outpace transportation system investments. The implementation plan provides the framework for the City to prioritize and fund the improvements identified in the transportation systems plan.

Financing Program

The GMA requires the Transportation Element of the Comprehensive Plan to include a multi-year financing plan based on the identified needs in the transportation systems plan. The financing plan for the Transportation Element provides a basis for the City's annual Six-Year Transportation Improvement Program (TIP). As required by the GMA, the financing program also includes a discussion of how additional funding will be raised and/or level of service standards will be reassessed to assure that the Transportation Element can adequately support the land use plan. Alternatively, the City may reassess its land use plan.



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The transportation financing program becomes a subset of the City's Capital Facilities Plan (CFP) Element. The GMA requires the CFP Element to include at least a six-year plan that finances capital facilities and identifies the sources of public money for the projects.

Project Cost Summary

Figure 4.20 summarizes the list of capital transportation improvement projects based on the analyses of existing conditions and traffic forecasts. Figure 4.22 summarizes the planning level project cost estimates from Figure 4.20. The project costs assume that right-of-way will be needed for some projects to match the City street design standards.

A total of \$104,850,000(2011 dollars) will be needed to fully fund the capital improvements over the 20 year horizon of the Transportation Element. Of these costs, over \$37.9 million are related to improvements on SR 169 within Maple Valley. SR 169 is a designated Highway of Statewide Significance (HSS). Another \$13 million is associated with improvements along SR 516 in the City, a state Highway of Regional Significance (HRS). Combined, the estimated costs of improvements to these two state highways total \$64 million, representing 55 percent of the total identified capital improvement needs. The remaining \$53.8 million in capital costs are needed for improvements to City arterials and collector roadways. These include improvements along Witte Road, SE 240th Street, and SE 276th Street, as well as construction of new roadways to improve circulation and reduce the use of the state highways for local traffic.

Improvement Category	Costs ¹
State Highway Improvements – SR 169	\$37,970,000
State Highway Improvements – SR 516	\$13,050,000
City Arterial Improvements – Existing Facilities	\$20,000,000
City Arterial Improvements – New Roadway Connections	\$33,830,000
Total Project Costs	\$104,850,000

1. Planning level costs in 2011 dollars.

Figure 4.22 - Capital Project Cost Summary

Funding Strategy

The City of Maple Valley utilizes a number of fees and tax revenues to construct and maintain their transportation facilities. Funding sources include local tax revenues, grants, partnerships with other agencies, and developer mitigation. Primary City revenues directed toward transportation capital improvement projects include the Real Estate Excise Tax (REET) and Surface Water Management (SWM) funds. The City also uses fuel taxes and can direct revenues from its General Fund to transportation capital projects, as needed, to balance its Six-Year Transportation Improvement Program (TIP). Developer mitigation could be in the form of traffic impact fees, SEPA mitigation, or construction of frontage improvements. Developer mitigation associated with the new master planned communities in Black Diamond also has been incorporated, consistent with the negotiated mitigation agreement between Maple Valley and Black Diamond. Other agencies such as WSDOT will share in the cost of state highway improvements to meet regional transportation needs.



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The City identified the most appropriate potential funding sources for each of the improvement projects. For example, grants or other agency funding was generally assumed to be a greater share of the revenues for funding improvements on SR 169 or SR 516 than on the local arterial improvements. While, it is unlikely that implementation of the Transportation Element projects will actually match the City's funding assumptions at a project-by-project level, this process does provide for a reasonable estimate of anticipated revenues needed for the overall capital improvement program. It also establishes a level of funding needed through traffic impact fees and other developer mitigation. Figure 4.23 summarizes the anticipated sources of revenues needed to fund the identified capital improvements.

Funding Element	2011 to 2030 Revenues (2011 \$)
<u>City Funding</u>	
Real Estate Excise Tax (REET)	\$14,131,135
Surface Water Management Fund (SWM)	\$2,978,045
	<i>Subtotal</i> \$17,109,180
<u>Grants and Other Agency Funding</u>	
Federal, State, or Other Grants/ Funding Partnership	\$34,359,000
Black Diamond Developer Mitigation ³	\$17,648,100
	<i>Subtotal</i> \$52,007,100
<u>Maple Valley Development Funding</u>	
Traffic Impact Fees – Future Projects ¹	\$35,684,720
Traffic Impact Fees – Prior Impact Fee Costs ²	\$5,800,000
Other Developer Mitigation – Maple Valley ³	\$10,420,000
	<i>Subtotal</i> \$51,904,720
<i>Estimated Revenues without Prior Traffic Impact Fee Costs</i>	<i>\$115,221,000</i>
Total Estimated Revenues	\$121,021,000

1. Traffic impact fee revenues based on \$35,684,720 of costs of capital improvements shown in Figure 4.21.
2. Impact fee program would also include \$4,800,000 associated with prior impact fee costs associated with the roundabout at Witte Road and SE 248th Street and \$1,000,000 for debt service for capital improvements for the Four Corners roadway improvement projects.
3. Maple Valley developer funding beyond traffic impact fees. Could include frontage improvements, local improvement districts, business improvement district, or other similar funding program. Assume that all, or part of, improvements are constructed or right-of-way dedicated as a condition of development.
4. Accounts for estimated revenues associated with mitigation of the master planned developments in Black Diamond pursuant to the mitigation agreement.

Figure 4.23 - Financing Strategy Summary

City Revenues

The City of Maple Valley has directed revenues from its Real Estate Excise Taxes (REET) to fund transportation improvement projects. The program identifies funding from REET at an average of over \$700,000 per year. The City also allocates some revenues from its Surface Water Management (SWM) program to help fund transportation projects. Drainage and retention of storm water is part of most roadway and intersection expansion projects making SWM revenue an appropriate part of the transportation funding program. Given the uncertainty of the REET and SWM funding on a year-to-year basis, the City plans to fill gaps in City revenues from its fuel taxes and general fund, as available. These other City funding sources are typically directed toward preservation and operations of the transportation system, but could be redirected to capital funding for a particular need, with the opportunity to be "reimbursed" through additional grants or future impact fee payments.



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Grants and Other Agency Funding

The funding program identifies over \$34 million in funding from grants or contributions by other agencies. This represents nearly 30 percent of the estimated capital transportation improvement program costs. The majority of the identified grant and other agency funding are associated with improvements to SR 169 and SR 516. These state highways serve a significant level of through traffic, therefore implementation of the projects will depend on funding by WSDOT or other outside funding sources as the City does not have the financial means to implement projects along these important regional highways. The travel forecasting process identified that 40 to 60 percent of the growth in traffic on the state highway was attributable to growth outside of Maple Valley. WSDOT and PSRC have established level of service standards for these facilities which will require funding through federal, state, and regional sources. In addition, partnerships with Black Diamond, Covington, King County, and transit providers can be part of the funding program for these state highways. Grant revenue also has been identified to help fund local arterial improvements identified in the Transportation Element. New roadway connections such as the proposed SE 231st Street and the extension of SE 240th Street will help reduce local traffic use of SR 169 and will support economic development within the City. The projects to upgrade SE 276th Street, 216th Avenue SE and Witte Road SE are also good candidates for grants as the City continues to transition from the County road standards designed for lower levels of traffic to more urban road standards to serve higher densities and provide for needed pedestrian and bicycle facilities.

Black Diamond Development Mitigation

Maple Valley and Yarrow Bay Holdings, the applicant for the two master planned communities in Black Diamond, have entered into a mitigation agreement to help fund transportation improvements in Maple Valley to address impacts identified in their environmental impact statements. Based on the percentage contributions toward specific projects, the City of Maple Valley funding analyses estimates this contribution at approximately \$17.65 million (2011 dollars). This estimate assumes significant levels of grant funding will be secured for these projects, prior to estimating the cost share for mitigation. If grant or other agency funding is not secured, then mitigation from the Black Diamond developments may increase.

Traffic Impact Fees

The GMA allows agencies to develop and implement a transportation impact fee (TIF) program to help fund some of the costs of transportation facilities needed to accommodate growth. State law (Chapter 82.02 RCW) requires that TIFs are:

- Related to improvements to serve new developments and not existing deficiencies.
- Assess proportional to the impacts of new developments.
- Allocated for improvements that reasonably benefit new development.
- Spent on facilities identified in the CFP.

TIFs can only be used to help fund improvements that are needed to serve new growth. The projects can include recently completed projects to the extent that they serve future growth and did not

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solely resolve existing deficiencies. The cost of projects needed to resolve existing deficiencies cannot be included.

The City implemented and adopted a traffic impact fee program in 1999. The program is defined in Chapter 16.60 of the Maple Valley Municipal Code. The original impact fee program was based on the City's Six-Year Transportation Improvement Program (TIP). This resulted in significant year-to-year changes in the impact fee, depending on what projects (and costs) were included in each year's TIP. For example, the cost per new PM peak hour trip in 2003-2006 was in the range of \$3,500 to \$4,000. During the 2007-2009 time periods, the City's traffic impact fee rate increased significantly, reaching a high of almost \$6,300 per new PM peak hour trip in 2008. During 2010, the City's impact fee rate dropped to \$2,859 which resulted from a significant decrease in projects included in the TIP due to the poor economy and reduction in other funding needed to implement the transportation projects. In 2008, the Washington State Auditor's office conducted a performance audit of different impact fee programs, including the City of Maple Valley. The Auditor's report recommended agencies use a longer-term project list for developing traffic impact fee programs in order to reduce these large fluctuations in fee rates.

The funding strategy assumes that the City will revise its traffic impact fee program based on the 20-year list of improvement projects, as identified in Figure 4.20. This process will reduce the annual fluctuations in impact fee rates and should bring more consistency to the revenue assumptions during the planning horizon. The use of a longer-term project list also will reduce the need for an annual update of the impact fee calculation. The City can apply a cost escalation factor each year, or update project cost estimates, to update the rates. A full evaluation and update of the impact fee rates would primarily be needed only when the Transportation Element is updated to reflect changes in land use plans, funding, level of service standards, or regional impacts.

The funding program for the Transportation Element identified which projects, and costs, were eligible to be included in the impact fee program. This resulted in approximately \$35.7 million in impact fee project costs. In addition, the City included costs for the recent roundabout at Witte Road at SE 248th Street (\$4.8 million) and debt service for growth-related transportation improvements in the Four Corners subarea (\$1 million). Based on these projects, and assumed grant and other agency funding, the traffic impact fees are estimated to account for almost \$41.5 million (2011 dollars) in revenues. This represents approximately one-third of the total funding program, including the contributions toward prior transportation projects and related debt service. The impact fee costs are divided by the increase of 10,388 growth trips estimated using the City's travel demand model. This results in a cost per new PM peak hour trip of approximately \$3,900, which is consistent with the City rates in effect during 2003 and 2006, but lower than the fees between years 2007 to 2009.

Other Developer Mitigation

The Transportation Element identifies \$10.4 million in other developer mitigation as part of the funding program. New developments can be required to dedicate right-of-way and/or construct at least part of some of the improvements listed in Figure 4.20. Developer mitigation could include frontage improvements and other identified improvements to mitigate capacity or safety deficiencies caused by the development. As part of the funding program, developer mitigation (beyond the



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identified traffic impact fees) is primarily assumed for improvements associated with new roadway corridors, including SE 231st Street, SE 271st Street, or upgrades to existing roadways such as SE 240th Street. The City may, however require developer mitigation at other locations identified in the Transportation Element or at other locations, as determined during the development application and review process. Other strategies for funding these new or upgraded City roadway corridors include the formation of one or more Local Improvement Districts (LID) or Business Improvement Districts (BID). Formation of LIDs or BIDs can help assure completion of the full corridor improvement in a timely manner, instead of a more piecemeal process as each development application is reviewed and approved.

Reassessment Strategy

The funding strategy is based on grants and other outside funding that the City does not control. As noted above, the City may be able to shift revenues from other funding programs to address specific needs as yearly budgets are prepared. In addition, the City is committed to reassessing their transportation needs and funding sources each year as part of their annual Six-Year Transportation Improvement Program (TIP). This allows the City to match the financing program with the shorter-term improvement projects and funding. The plan also includes goals and policies to periodically review land use growth, adopted level of service standards, and funding sources to ensure they support one another and meet concurrency requirements.

In order to maintain the vitality of the City's transportation system, the City should adhere to the following principles in its funding program:

- As part of the development of the annual Six-Year Transportation Improvement Program, the City will balance improvement costs with available revenues.
- Review project design during the development review process to determine whether costs could be reduced through reasonable changes in scope or deviations from design standards.
- Coordinate and partner with WSDOT and other agencies to vigorously pursue grants from state, federal, and regional agencies to help fund and implement improvements along SR 169 and SR 516.
- Work with regional and local agencies to develop multi-agency grant applications for projects that serve regional travel.
- Review traffic impact fee revenues each year to determine whether the impact fees should be adjusted to account for project cost increases and/or decreases in grants or WSDOT cost sharing.
- If the actions above are not sufficient, consider changes in the level of service standards and/or limit the rate of growth.

Implementation Program

Implementation of the Transportation Element involves several strategies. These include coordination with developers and partnering with other agencies to construct the transportation



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improvement projects and expand transit service to the City. Partnering with other agencies and use of grants will be especially critical in the implementation of safety, capacity, and operational improvements along SR 169 and SR 516. This may include re-prioritizing roadway projects as new funding sources become available or by focusing on areas most impacted by new development. The City will also continue to review strategies to phase improvements to allow funding to be spread over a longer time period. In addition, the City will need to review, maintain, and possibly update its Concurrency Management Program, Traffic Impact Fee, and other development review processes to assure that the impacts of growth are mitigated and transportation improvements are completed concurrent with new development.

Partnering with Other Agencies

The City of Maple Valley is designated as a larger city in PSRC's Vision 2040 plan. The Vision 2040 plan notes that these larger cities will play an important role in accommodating growth in the region. In particular, these cities will continue to become important subregional job, service, cultural, and housing centers. The Transportation Element supports the City's role through its policies to support and expand use of transit, transportation demand management, and non-motorized travel to reduce the number of vehicle trips generated by development in the City. The City will need to coordinate with King County Metro and other nearby cities to implement facilities and services to meet those objectives. These will also help assure consistency in plans and implementation programs between agencies to meet the goals of the regional plan.

The City will partner with WSDOT to implement improvements along both SR 169 and SR 516 consistent with the Transportation Element project list. Projects along both state highways serve regional travel patterns as well as provide local access within Maple Valley. Without WSDOT as a partner, the City is unable to put a high priority on major capacity improvements along both state highways since the improvements serve significant levels of regional traffic and the projects cost more than the City can reasonably fund on their own. These projects should be considered for joint submittal of grants, with the local match being combined from benefiting agencies. Partnering with WSDOT will be critical in the implementation of the Transportation Element project list.

The City has entered into an agreement with Yarrow Bay Holdings, the applicant for two master planned communities in Black Diamond, related to mitigation of traffic impacts in Maple Valley. The City of Black Diamond has incorporated the mitigation into the conditions of approval for the Lawson Hills and The Villages developments. Maple Valley will need to monitor the growth and impacts of these developments. The City can combine the mitigation funding with City funding in its pursuit of grants and/or partnerships with other agencies to implement key improvements along SR 169 and SR 516.

Other agency partnering opportunities involve King County Metro Transit and the Tahoma School District. Coordination with both agencies could lead to cost sharing of improvements to construct pedestrian facilities around schools or transit routes.



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Project Priorities and Timing

The City of Maple Valley will use the annual update of the Six-Year TIP to re-evaluate priorities and timing of projects. Throughout the planning period, projects will be completed and priorities will be revised. The development of the TIP also will be used to identify potential phasing options to fit within available revenues during that six-year time horizon. The City will monitor traffic volumes and the location and intensity of land use growth in the City. The City will also need to monitor traffic growth from Black Diamond and other adjacent communities. Based on this information, the City will then be able to direct funding to areas that are most impacted by growth or may fall below the City's level of service standard. The development of the TIP will be an ongoing process over the life of the plan and will be reviewed and amended annually.

Concurrency Management and Development Review

Concurrency refers to the ongoing process of coordinating infrastructure needs with community development. This concept was formalized in the GMA to ensure that adequate public facilities are provided in concert with population and employment growth. For transportation facilities, the GMA requirement is fulfilled if its level of service standards will continue to be met including the additional travel demand generated by each development.

Concurrency determinations for the roadway network are closely linked with development review decisions. In addition, the City reviews development applications pursuant to the State Environmental Policy Act (SEPA). Concurrency and SEPA are primarily focused on a shorter-term time frame. The City requires payment of traffic impact fees to help fund growth related improvements, both long-term and short-term needs. Projects that resulted in an adverse traffic impacts are required to fund or implement mitigation measures that reduce the impact below a level of significance and/or meet the level of service standard. The City provides credits where developers are required to construct improvements whose costs are included in the traffic impact fee program.

The City will need to regularly monitor the operations and levels of service for the identified concurrency intersections. This will include an assessment of existing operations for North and South Concurrency Intersections. The monitoring also will evaluate forecast conditions to estimate the number of new PM peak hour trips that can be accommodated before the level of service standard for the North and/or South Concurrency Intersections would not be met. This will be used by the City in evaluating concurrency for proposed development. The City will use this information in developing its Six-Year Transportation Improvement Program, pursuit of grants, and coordination with WSDOT and other agencies.

The North Concurrency Intersections currently operate at a weighted average LOS D and the South Concurrency Intersections operate at LOS D based on 2014 traffic count data. These meet the City's LOS standard. Based on the 2030 baseline forecasts, the North Concurrency Intersections would operate at LOS F and the South Concurrency Intersections would operate at LOS E if no further improvements are made. Using a straight-line estimate of growth, the North Concurrency Intersections are estimated to fall below the LOS D standard by 2018. The South Concurrency



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Intersections would likely drop below their LOS D standard by 2027. Therefore, the City will need to pursue improvements in the north part of SR 169 within the next several years in order to maintain concurrency. With the improvements identified in the Transportation Element both the North and South concurrency Intersections are forecast to operate at a weighted average LOS D.

As each development application is reviewed, the City will determine if there are an adequate number of trips available at the concurrency intersections. If the number of trips available for the concurrency intersections is not sufficient then the City will establish conditions of approval. Since SR 169 is a Highway of Statewide Significance, the City cannot use concurrency to deny the development application; therefore, conditions of approval will be established through SEPA and in coordination with WSDOT (as applicable) in order to mitigate the impacts of the development.

The City will also monitor traffic operations and safety at other intersections throughout the City. The City will apply SEPA and the City's Road Standards to evaluate and identify appropriate improvements for mitigating impacts of developments in the City. The City also will conduct its own studies and work with other agencies to define needed improvements to be incorporated into its Six-Year Transportation Improvement Program, which is updated annually.

If expected funding for improvements to meet future transportation needs is found to be inadequate and the City will not be able to meet their adopted level of service standards, then the City will need to pursue options as laid out under the Reassessment Strategy, presented previously.

CONSISTENCY WITH OTHER AGENCIES

Maple Valley's transportation system is part of, and connected to, a broader regional highway and arterial system. The GMA works to increase coordination and compatibility between the various agencies that have responsibilities for the overall transportation system. Since transportation improvements need to be coordinated across jurisdictional boundaries, the Transportation Element needs to be consistent with and supportive of the objectives identified in the Washington State Transportation Plan, PSRC's Vision and Transportation 2040, and the transportation plans or capital improvement plans of the surrounding agencies. Developing the Transportation Element is primarily a bottoms-up approach to planning, with the City exploring its needs based on the land use plan. Eventually, the local projects are incorporated into regional and state plans. A schematic of this approach is shown below.



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The Maple Valley Transportation Element took into account planned improvements, priorities, and policies of the WSDOT, PSRC, King County, City of Covington, and the City of Black Diamond. The following summarizes how the Maple Valley Transportation Element relates and is consistent to these other state, regional, and neighboring agency plans.

WSDOT

The Washington Transportation Plan (WTP) recently updated in 2015 and the associated 2007-2026 Highway System Plan (HSP) from December 2007, provide the umbrella for all metropolitan and regional transportation plans. The updated WTP focuses on key policies and strategies for the State, while the HSP still maintains the most recent long-term statewide project list.

The Highway System Plan is an element of the WTP. The HSP identifies highway system improvement projects and programs consistent with the WTP priorities. The HSP is constrained by available funding forecast for the next 20 years. Policies and improvement projects listed in the WTP and HSP were reviewed for consistency with the strategies and projects recommended in the Transportation Element.

As required by the GMA, the Maple Valley Transportation Element addresses the existing and future conditions of SR 169 and SR 516 serving the City. The transportation inventory describes existing traffic volumes, levels of service, and safety along both highways. The Transportation Element also identifies forecast conditions and improvement needs to resolve capacity, operations, safety, and multimodal transportation needs along both corridors. SR 169 is classified as a State Highway of Statewide Significance (HSS). According to the HSP, the LOS standards are set forth by State law. State law sets LOS D for HSS facilities in urban areas. Since the City is a designated urban area, the LOS D standard applies for the segment of SR 169 within the City. GMA concurrency requirements do not apply to HSS facilities. While the City will monitor several SR 169 intersections as part of its concurrency program, any conditions of development approval will be established through SEPA and projects would not be denied based on concurrency, thereby maintaining consistency with the state statutes and regional plans.



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SR 516 is classified as a Tier 2 State Highway of Regional Significance (HRS). PSRC and the local agencies have adopted an LOS D standard for SR 516 within Maple Valley. Concurrency will be applied along this corridor based on the program summarized previously in the Transportation Element. The City's LOS D standard for arterials and collectors is consistent with state and regional LOS standards for both SR 169 and SR 516.

The City has worked with WSDOT to coordinate and implement roadway and intersection improvements along SR 169 and SR 516. The WSDOT HSP calls for widening SR 169 to four lanes through the City from SE 231st Street to Kent-Kangley Road SE. The widening along SR 169 is also reconfirmed in the WSDOT SR 169 Route Development Plan (RDP) completed in 2007. However, the RDP shows the widening of SR 169 extending to SE 291st Street, which is the southern city limits. Maple Valley's Transportation Element identified the need for widening SR 169 to four or five lanes ending at SE 280th Street, with only one additional southbound through lane extending to the southern city limits. The City's improvement projects for SR 169 are generally consistent with the WSDOT SR 169 RDP, which was completed after the update of the HSP.

The Transportation Element identifies widening SR 516 to five lanes from the City limits to 216th Avenue SE, with three lanes continuing to the future SE 271st Street Extension. The Highway System Plan does not identify any improvements to SR 516 in the next twenty years. A recent WSDOT SR 516 Corridor Study (January 2013) looked at the corridor between SR 167 in Kent and SR 169 in Maple Valley. This study identified long-term capacity improvements to the corridor at many locations west of Maple Valley including between 192nd Avenue SE to 216th Avenue SE. However, the Corridor Study did not look at a scenario that considered changes in travel demands once the capacity bottleneck in Covington was removed (widened), and therefore the Corridor Study recommended no changes east of 216th Avenue NE. Based on the analysis conducted for this Transportation Element, it is expected that the capacity bottleneck would shift east and require additional capacity and urban improvements to SR 516 east of 216th Avenue NE as discussed in this Transportation Element.

None of the widening projects along either SR 169 or SR 516 are currently funded by WSDOT, but the City is including a portion of the costs as part of its traffic impact fee program. The City will continue to work with the WSDOT to aggressively pursue grants or other funding to implement the state highway improvements along these critical corridors as identified in the Transportation Element.

PSRC

The Puget Sound Regional Council (PSRC) adopted VISION 2040 and Transportation 2040 to guide transportation policies, priorities and investments for the four county region. The update of the Maple Valley Transportation Element included a review of the policies and projects that were important to consider and build from to provide regional and local consistency. The appropriate policy and project updates were incorporated into the City's Transportation Element so that it is consistent and supportive of both VISION and Transportation 2040 (the Region's Metropolitan Transportation Plan). Several policies were added to the City's Transportation Element to address important regional priorities such as multimodal connectivity, complete streets, green streets, low



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impact design, sustainability, electric vehicles, alternative fuel, environmental impacts, air quality, and travel demand management.

The PSRC travel demand model was used as the basis in constructing the Maple Valley travel demand model. The travel forecasts for areas outside the City's immediate study area were directly integrated from the PSRC model. Therefore, the travel forecasts and subsequent operations and safety analysis for the City considered and incorporated regional growth, consistent with PSRC land use and travel forecasts.

Transportation 2040 identifies widening along SR 169 to four lanes through the City from SE 231st Street to Kent-Kangley Road SE (SR 516) with WSDOT as the lead sponsor. In addition, Transportation 2040 also shows the widening of SR 169 to five lanes extending between SE 270th Street and SE 291st Street, which is the southern city limits. The City's Transportation Element identifies widening of SR 169 to four or five lanes south to SE 280th Street, with only one additional southbound through lane extending to SE 291st Street. Since PSRC identified the City of Maple Valley as the sponsoring agency of that project, the next update of the regional plan should incorporate the updated extents of the widening along SR 169 and show five lanes is only necessary to SE 280th Street. Otherwise, the City's improvement projects for SR 169 are generally consistent with Transportation 2040.

Transportation 2040 also includes widening the SR 516 corridor to five lanes from the western City limits to SR 169, but does not show any additional widening to the west of the City within the City of Covington. The Transportation Element identifies the need to widen SR 516 to five lanes from the western city limits to 216th Avenue SE, but only if widening is completed in the City of Covington to the west. If the five lane cross section is not extended to the east from Jenkins Creek (180th Avenue SE), then widening beyond three lanes within the City of Maple Valley would not be necessary. As discussed above, a recent WSDOT SR 516 Corridor Study (January 2013) was completed that identified long-term capacity improvements to the corridor between 192nd Avenue SE to 216th Avenue SE, which is consistent with the City's Transportation Element. However, the corridor study failed to identify volume demand changes to the corridor east of 216th Avenue once this widening occurred, and did not identify any capacity improvements for the eastern section of the corridor. Based on the analysis conducted for this Transportation Element, it is expected that capacity improvements would be needed east of 216th Avenue SE along SR 516.

The City roadway functional classification system is slightly different from the federal functional classification system, particularly for roadways such as Witte Road, SR 516, and many of the collector streets. The City will work with PSRC to prepare and submit an application to update the federal functional classification map so that it is consistent with the City street classifications. The changes should be focused on key corridors such as Witte Road, SR 516, SE 240th Street, 228th Avenue SE, SE 231st Street and SE 280th Street.

King County



TRANSPORTATION

Support Analysis

King County transportation and capital improvement plans were reviewed as part of the Maple Valley Transportation Element update. County road classifications were also reviewed and determined to be compatible. The City's functional classification map notes the classification of County roadways. Roadway construction projects were obtained from King County's Transportation Needs Report 2012 (TNR). No major capital improvements are identified within the unincorporated areas of King County that would impact or influence specific outcomes of the Maple Valley Transportation Element. Additionally, King County's existing and future land use data for unincorporated areas within the study area were included into the Maple Valley travel demand model. The Transportation Element is consistent with and accounts for travel forecasts from the unincorporated areas of King County.

King County Metro Transit

King County Metro Transit provides transit service for Maple Valley. The Maple Valley Transportation Element acknowledges the need for coordination between the City and King County Metro to work together to identify service improvements and strategies to serve Maple Valley. The City has also developed policies and road standards to provide adequate streets and non-motorized facilities to support transit service. King County Metro's six-year development plan was reviewed as part of the Maple Valley Transportation Element update. No significant service changes or new transit facilities are currently planned for the City of Maple Valley. However, the Maple Valley Transportation Element identifies desired service enhancements to help reduce travel demands and support the higher densities identified in the Land Use Element, as set forth in the PSRC plans.

City of Covington

The City of Covington is located to the west of Maple Valley. The primary transportation interface is along the SR 516 and Wax Road corridors. The Maple Valley Transportation Element identifies the need to widen SR 516 to five lanes from the western city limits to 216th Avenue SE, but only if widening is completed in the City of Covington to the west. Covington's Six-year Transportation Improvement Plan (2015-2020) identifies two projects to widen SR 516 to five lanes from Jenkins Creek to 192nd Avenue SE. This still leaves approximately one mile of roadway between 192nd Avenue SE and the western Maple Valley city limits to be widened. Covington's existing Transportation Element (2009) does not identify any additional widening of SR 516 east of 192nd Avenue SE during the next twenty years. Any future implementation of improvements along SR 516 would need to be closely coordinated between both cities.

The Maple Valley travel demand model incorporates Covington's existing and future land use projections. In addition, the model transportation analysis zones (TAZs) are consistent with the zones in Covington's travel demand model in order to easily integrate and evaluate future changes in land use within the study area.

City of Black Diamond



TRANSPORTATION

Support Analysis

The transportation systems for the Cities of Maple Valley and Black Diamond connect along the southern boundary of Maple Valley. SR 169 and 216th Avenue SE connect to the City of Black Diamond and its UGA. The Maple Valley travel demand model incorporates Black Diamond's future employment and residential projections. The land use growth expected to occur in the City of Black Diamond was an important consideration in developing the travel forecasts and identified capital projects that are highlighted in the Maple Valley Transportation Element. The land use growth assumed for Black Diamond is consistent with the major development plans for Lawson Hills and The Villages, two master planned communities that have been approved. As part of the approval process, Maple Valley entered into an agreement with the applicant for two master planned communities to provide funding for needed regional improvements. This mitigation revenue has been estimated in the Transportation Element funding strategy.

The Transportation Element identifies two projects that border the City of Black Diamond and its UGA. They include widening of SR 169 to three lanes to the southern city limits of Maple Valley, and widening and reconstructing SE 216th Avenue SE to three lanes to support the increase in traffic volumes and non-motorized activity between Black Diamond and Maple Valley. Land use growth in Black Diamond also depends on other capacity improvements in the City of Maple Valley such as widening of both SR 516 and SR 169. The City of Maple Valley will monitor the growth and impacts of development in Black Diamond and pursue grants and/or partnerships with other agencies, along with the mitigation payments, to help implement the regional improvements along SR 169 and SR 516.



TRANSPORTATION

Goals & Policies

INTRODUCTION

The Transportation Element provides the link between the Land Use Element and the transportation facilities and services needed to support growth during the next twenty years. This is accomplished by identifying capacity, operational, and safety improvements along City roadways and also by addressing multimodal needs such as transit, pedestrian, and bicycle facilities. The Transportation Element reflects the interdependence of transportation and land use and is influenced by choices made as part of the Land Use Element. Conversely, land uses are similarly influenced by choices and policies made in the Transportation Element.

The Transportation Element is a key component of the City's Comprehensive Plan and works hand-in-hand with other Comprehensive Plan elements. This section identifies the City of Maple Valley's goals and policies for transportation as well as the City's future transportation system and facilities, level-of-service (LOS) standards, and concurrency monitoring system. Future land uses proposed as part of the Land Use Element are used to develop transportation strategies and to identify necessary transportation facilities (roadways, sidewalks, trails, bike lanes, etc.). Similarly, the Capital Facilities Element and the City's ongoing Transportation Improvement Program (TIP) present more-specific facility recommendations based on the Transportation Element.

GOALS & POLICIES

Goal T-1: To provide for a safe, efficient, integrated, and sustainable multimodal transportation system consistent with regional transportation objectives that support the City's Comprehensive Plan Vision and the Land Use Element.

REGIONAL TRANSPORTATION FRAMEWORK

- Policies:**
- T-P1** Support the development of a balanced regional transportation system and work with federal, state, regional and local agencies to develop the City's transportation system, financing strategy, and land use plan that helps achieve regional mobility goals.
 - T-P2** Coordinate with the Puget Sound Regional Council (PSRC), state, and other regional and local agencies to plan, implement, and operate a highly efficient, sustainable, multimodal transportation system that supports the *Regional Growth Strategy* as outlined in VISION 2040.
 - T-P3** Coordinate infrastructure planning and financing with other agencies to ensure that these plans are consistent with the regional mobility goals and land use plans.
 - T-P4** Develop and implement non-motorized transportation systems, such as bicycle and pedestrian facilities and connections, which are consistent with regional non-motorized plans as well as coordinate with adjacent jurisdictions and King County Parks Department to ensure the interconnectedness of the local trail system.
 - T-P5** Coordinate with federal, state, regional, and other local agencies to



TRANSPORTATION

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- protect the operation of the transportation system in time of emergency, disaster, or security response.
- T-P6** Coordinate with federal, state and regional agencies to secure the funding necessary to improve SR 169 and SR 516 to urban standards in accordance with adopted plans.

LOCAL TRANSPORTATION SYSTEM

- T-P7** Develop the City's transportation system to serve existing and future land uses and promote economic growth.
- T-P8** Provide for the needs of drivers, public transportation vehicles and patrons, bicyclists, and pedestrians of all ages and abilities in the planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance of the City's transportation system.
- T-P9** Implement transportation improvement projects and programs to develop a safe and efficient multimodal transportation system, while minimizing the negative impacts to low-income, minority, and special needs populations.
- T-P10** Promote the mobility of goods and people and seek to ensure multimodal transportation options which are consistent with the City's Vision.
- T-P11** Promote connectivity by creating multiple access points and definitive circulation systems.
- T-P12** Involve the public in identifying transportation system needs and the planning, design, and implementation of transportation facilities, programs, and services.
- T-P13** Adopt a six-year Transportation Improvement Program (TIP) to support implementation of City transportation improvement projects and programming of revenues.
- T-P14** Preserve and acquire rights-of-way to implement the Transportation Element.
- T-P15** Apply a street functional classification system which identifies a street hierarchy and is consistent with the City's roadway design standards.
- T-P16** Design, operate, and regulate access along arterials to improve safety and operations, accommodate and facilitate through traffic, and connect with regional facilities. Where appropriate, work with the Washington State Department of Transportation (WSDOT) to accomplish these actions.
- T-P17** Work with WSDOT and adjacent jurisdictions to discourage diversion of traffic from arterials onto local streets.
- T-P18** Consider use of traffic calming measures to discourage cut-through traffic in residential areas, while maintaining an interconnected street system for access and circulation.
- T-P19** Encourage and promote the inter-connection of streets and non-motorized connections. Where cul-de-sacs are allowed, provide for non-motorized connections, where practical.



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Goals & Policies

- T-P20** Accommodate reasonable emergency vehicle access on public streets.
- T-P21** Protect the investment in the existing and future street system and associated facilities (e.g., sidewalks, transit stops, landscaping) through an ongoing street maintenance and preservation program.
- T-P22** Work with local utility providers to ensure that future roadway improvements are coordinated and timed to occur concurrently with utility improvement needs to the maximum extent possible.
- T-P23** Work with developers to ensure that roads are built to City standards through a combination of right of way dedication, frontage improvements, funding through mitigation fees, and traffic impact fees.
- T-P24** Land dedication and roadway improvements associated with projects listed on the City's long range Capital Improvement Program that are completed by private development may be eligible for a credit to be applied towards traffic impact fees owed for the same development.

LEVEL OF SERVICE AND CONCURRENCY REVIEW

- T-P25** Establish LOS D or better for concurrency review based on a weighted average delay of key intersections during the weekday PM peak hour. The average delay at each intersection would be calculated using the *Highway Capacity Manual, 2010* methodologies. The weighted average is based on the sum of total delays at the group of concurrency intersections divided by the sum of the total entering volumes for the same intersections. The following intersections will be evaluated under concurrency:
 - North Maple Valley (4 intersections)
SR 169 @ 231st Street; @ Wax Road; @ Witte Road; @ 240th Street.
 - South Maple Valley (3 intersections)
SR 516 @ SR 169; @ Witte Road; @ 216th Avenue.
- T-P26** Establish the following level of service standards for other intersections in the City using the *Highway Capacity Manual, 2010* methodologies:
 - Signalized, Roundabout, and All-way Stop Controlled Intersections
The LOS standard for all non-concurrency signalized, roundabout, and all-way stop controlled intersections within the City limits shall be LOS D. The LOS standard will be evaluated based on the average performance of all approaches.
 - Two-way, Stop Controlled, Unsignalized Intersections
The LOS standard for all two-way, stop controlled, unsignalized intersections within the City limits shall be LOS D and be applied to each approach or separate traffic movement at an intersection. For intersections on SR 169, Kent-Kangley Road and Witte Road



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the LOS standard shall be LOS D for the major arterial legs and LOS E for each access leg. On a case-by-case basis the City may allow the level of service for traffic movements from the minor street at a two-way, stop controlled intersection to operate below the adopted standard if the Public Works Director (or designee) determines that no significant safety or operational impact will result. As appropriate, mitigation will be identified and required to address potential impacts to safety or operations. Potential installation of traffic signals or other traffic control devices at these locations shall be based on the *Manual on Uniform Traffic Control Devices*, the Transportation Element, and sound engineering practices.

- T-P27** Adopt and implement development regulations and a transportation concurrency management program based on the adopted level of service standards.
- T-P28** Monitor the operation of the transportation system to determine whether the level of service standards and concurrency requirements are being met. If concurrency cannot be demonstrated, the City shall reassess the Land Use and Transportation Elements and make modifications to ensure that concurrency requirements can be reasonably met.

NON-MOTORIZED TRANSPORTATION

- T-P29** Implement non-motorized transportation facilities and services consistent with policies and strategies in the Non-Motorized Plan; Comprehensive Plan; Road Standards; Design Review Guidelines; Development Standards; and Parks, Recreation, Cultural and Human Services Plan.
- T-P30** Apply applicable WSDOT design standards in constructing new facilities and retrofitting existing City transportation facilities that address the needs of pedestrians and bicyclists along state highways.
- T-P31** Employ Design Guidelines for Off-Street Facilities included in the Non-Motorized Transportation Plan and geometric design guidelines from the Maple Valley Parks, Recreation, Cultural and Human Services Plan for walking and bicycling facilities that are not part of the general purpose roadway system.
- T-P32** Develop a map of Maple Valley's bicycle routes and trail system and make it available on the City web page and at the Maple Valley Chamber of Commerce and other information outlets.
- T-P33** Condition proposed new developments to ensure convenient walking and bicycling systems that are attractive, safe, provide system continuity, and provide access to transit and other destinations, as appropriate.
- T-P34** Ensure that signs, pavement markings, pedestrian crossings, and wheelchair ramps are established and maintained to provide a high degree of safety and accessibility for pedestrians and bicyclists.



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- T-P35** Encourage or require, as appropriate, the provision of accessories, such as parking at trailheads, disabled parking, bicycle racks, bus stops, rider shelters, bike carriers on transit buses and other devices that facilitate transfers to, from and between alternative modes of travel.
- T-P36** Support the use of utility and transportation corridors both inside and outside the City for non-motorized goals and purposes.
- T-P37** Confer regularly with officials from Tahoma and Kent School Districts to evaluate changing needs for bus stops and school walking routes and respond with appropriate actions.
- T-P38** Preserve existing soft-surface trails for corridors within the City.
- T-P39** Support workshops or clinics to teach safe cycling to school age children.
- T-P40** Support and enforce laws that are designed to provide safety for pedestrians, bicyclists and people with mobility disabilities.
- T-P41** Develop and implement a system of signs that builds upon the City's streetscape and furniture theme to mark trails and non-motorized routes.

TRANSIT AND TRAVEL DEMAND MANAGEMENT

- T-P42** Consider measures that encourage and support the use of transit, ridesharing, transportation demand management, and non-motorized travel.
- T-P43** Work with King County Metro Transit and Sound Transit to enhance transit service to Maple Valley and surrounding communities and to ensure that public transportation is a viable option.
- T-P44** Support development of an integrated, multimodal, regional transportation system that serves the needs of Maple Valley and which provides alternatives to the drive-alone commute. Work with regional transit providers to develop and operate a regional system that is efficient and easy to use.
- T-P45** Encourage and support transit services and facilities that meet the needs of persons with disabilities, the elderly, the young, low-income populations, and people with special needs.
- T-P46** Support and promote commute trip reduction (CTR) programs, telecommuting, electronic communications, variable work weeks, flextime, and a variety of transportation demand management (TDM) strategies aimed at reducing the number and length of car trips and increasing the efficiency of the transportation system.
- T-P47** Implement programs that are consistent with countywide and regional mode-split goals and policies for reducing single-occupancy vehicle travel.
- T-P48** Work with King County Metro, Sound Transit, WSDOT and other agencies to locate, construct and operate park-and-ride and park-and-pool lots to serve the City and southeast King County.
- T-P49** Coordinate with transit providers to locate and develop bus stops, add or improve shelters, and expand and add new Park and Ride lots.



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PARKING

- T-P50** Require appropriate levels of parking for all land uses, consistent with the City's Vision.
- T-P51** Establish minimum and maximum levels of parking that should be provided for commercial uses.
- T-P52** Establish the appropriate role and design of parking facilities for commercial uses to provide parking opportunities but which do not promote excessive drive-alone trips.
- T-P53** Provide for and encourage use of shared parking facilities.
- T-P54** Develop regulatory incentives for reduced parking requirements based upon provisions for multimodal facilities and transportation services.
- T-P55** Encourage installation of parking to accommodate electric vehicle charging stations in private and public developments.
- T-P56** Encourage below grade parking under commercial, retail, and residential buildings, and encourage the use of on-grade multi-story parking structures to reduce the amount of land set aside for required parking. Consider height or density bonuses to offset some of the additional cost of these options.

LAND USE AND ECONOMIC DEVELOPMENT

- T-P57** Provide adequate transportation facilities and services to promote and support economic development and accommodate anticipated growth.
- T-P58** Provide transit, walking, and bicycling opportunities to enable mobility concurrent with new growth and reduce dependency on single-occupancy vehicle travel.
- T-P59** Encourage shorter vehicle trips, access to transit, and travel by bicycle and pedestrian modes through encouraging a mix of complementary land uses throughout Maple Valley.
- T-P60** Reduce vehicle trip generation by locating commercial activities and other uses in a manner which combines vehicle trips and decreases overall parking demands.
- T-P61** Design and construct transportation facilities to safely and efficiently support the movement of regional and local freight.

ENVIRONMENTAL QUALITY AND SUSTAINABILITY

- T-P62** Identify, evaluate, and fully consider environmental impacts of transportation facilities and operations. Pursue transportation projects, programs and investment strategies consistent with noise reduction, air quality and water quality objectives.
- T-P63** Support the development and implementation of a transportation system



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- that is energy efficient and improves system performance.
- T-P64** Develop the transportation system that minimizes the negative impacts to human health and promotes active transportation, encourages physical activity, and overall improved safety for a healthy community.
 - T-P65** Coordinate with county, regional, state, and federal agencies air quality standards to ensure that the City's transportation projects and programs conform to state and federal law
 - T-P66** Consider strategies to address air quality standards and reduce greenhouse gas emissions such as promoting compact development, efficiently managing the operation of the transportation system, implementing Transportation Demand Management programs, and expand local employment growth in order to reduce vehicle miles traveled leading to lower impacts on air quality.
 - T-P67** Participate in efforts by county, regional, and state agencies to improve programs and management strategies designed to prevent and reduce contamination of street runoff and storm water.
 - T-P68** Participate in efforts by WSDOT and public transportation providers to identify, design, and incorporate noise mitigation measures into existing and planned traffic and transit operations and capital improvements.
 - T-P69** Review proposed roadway corridors for potential impacts to identified critical areas and identify reasonable alternatives to these proposed alignments, avoid such alignments, and mitigate and minimize impacts.
 - T-P70** Promote use of low impact development (LID) and best management practice (BMP) techniques in the planning, design, and construction of transportation system improvements.
 - T-P71** Design transportation facilities to advance cleaner, more sustainable mobility that fits within the context of the built or natural environments in which they are located. This includes green streets and context-sensitive designs.
 - T-P72** Promote the accommodation and develop standards for electric vehicle charging / battery exchange stations.

FINANCING

- T-P73** Pursue and implement transportation financing methods, such as transportation benefit districts or user fees (as allowed by state law), to support ongoing maintenance, preservation, and operation of the City's transportation system.
- T-P74** Ensure that new development pays a proportionate share of the costs of transportation facilities needed to support growth. New development may contribute to the costs of needed improvements through: SEPA-based mitigation, traffic impact fees, frontage improvements, local improvement districts, and other means allowed by State and local laws.



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- T-P75** Structure developer impact fees to ensure that new development contributes its fair share of the resources needed to mitigate the impact on transportation facilities, as allowed under State law.
- T-P76** Continue to work with Black Diamond, Covington, and King County to mitigate transportation impacts of development on Maple Valley and vice versa.
- T-P77** Continue to develop partnerships with WSDOT, King County, Metro Transit, and local agencies to define and fund improvement projects and programs.
- T-P78** Actively pursue grants individually or with other agencies to help fund transportation projects to support the maintenance, operations, and upgrading of the transportation system.
- T-P79** Actively lobby the State DOT and Legislature to uphold its responsibility in providing funding to Maple Valley for transportation improvements on SR 169 and SR 516 to stimulate economic development, improve safety and enhance the quality of life in our community.
- T-P80** Use funds from the Storm Water Management Fee to help pay for the costs of water quality facilities that are constructed as part of the transportation improvement projects.
- T-P81** Evaluate project design strategies that can reduce costs of transportation improvements or provide for phasing of improvements to spread the costs over time.
- T-P82** Balance the estimated expenditures in the City's annual Six-Year Transportation Improvement Program (TIP) with available revenues.
- T-P83** Periodically review longer range transportation funding options and consider changes in the level of service standard or land use element if sufficient funding is not available